The present invention is directed to plants that display an improved oil quantity phenotype or an improved meal quality phenotype due to altered expression of an H1O nucleic acid. The invention is further directed to methods of generating plants with an improved oil quantity phenotype or improved meal quality phenotype.
INTERNATIONAL SEARCH REPORT

International application No. PCT/US 07/87444

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A01H 1/00, C12N 15/82 (2008.04)
USPC - 800/281, 435/419

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)

SPC- 800/281, 435/419

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

USPC: 800/281, 278, 435/419, 410

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 2006/0150283 A1 (ALEXANDROV, N. et al.) 6 July 2006 (06 07.2006) para [0027], [0470]-[0477], [0746][0750]; SEQ ID NO:104063, SEQ ID NO:104065.</td>
<td>1-1 1 and 15-26</td>
</tr>
<tr>
<td>A</td>
<td>ROOK, F. et al Arabidopsis thaliana mRNA for impaired sugar induction 1 (ssi1 gene) GenBank Accession No. AJ697740. 06 June 2006 (06 06.2006)</td>
<td>1-29</td>
</tr>
</tbody>
</table>

D 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)
  "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
10 June 2008 (10 06.2008)

Date of mailing of the international search report
24 JUN 2008

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
PCTOSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2007)
### INTERNATIONAL SEARCH REPORT

**International application No**

PCT/US 07/87444

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**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. **D**
   - 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. **I**
   - Claims Nos
   - because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6(4(a))

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**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 extra sheet

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1. **I**
   - As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims

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

3. **I**
   - 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. **X**
   - 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
   - Claims 1-29 restricted to SEQ ID NO 1 and SEQ ID NO 2

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**Remark on Protest**

- **I** The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee
- **I** 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
- **I** No protest accompanied the payment of additional search fees
Continuation of Box III (Lack of Unity)

In order for more than one species to be examined, the appropriate additional examination fees must be paid. The species are as follows:

The species are the 8 polypeptides coded by nucleic sequences represented by SEQ ID NO 1, SEQ ID NO 3, SEQ ID NO 5, SEQ ID NO 7, SEQ ID NO 9, SEQ ID NO 11, SEQ ID NO 13, and SEQ ID NO 15 or the corresponding amino acid sequences represented by SEQ ID NO 2, SEQ ID NO 4, SEQ ID NO 6, SEQ ID NO 8, SEQ ID NO 10, SEQ ID NO 12, SEQ ID NO 14, and SEQ ID NO 16

The claims are deemed to correspond to the species listed above in the following manner:

Claims 1-11 and 15-26 are directed to the polypeptide represented by a particular amino acid sequence or the nucleic acid coding for that particular amino acid sequence (e.g., the nucleic acid sequence of SEQ ID NO 1 codes for the amino acid sequence of SEQ ID NO 2, the nucleic acid sequence of SEQ ID NO 3 codes for the amino acid sequence of SEQ ID NO 4, etc.) 8 species of polypeptides are represented in claims 1-29

Claims 12-14 and 27-29 are generic

The species listed above do not relate to a single general inventive concept under PCT Rule 13 1 because, under PCT Rule 13 2, the species lack the same or corresponding special technical features for the following reasons:

The common technical feature of the listed groups is the transgenic plant altered in oil content. However, this is not an improvement over the prior art of US 2006/0277630 to Lightner et al (7 December 2006) that discloses plants that display an altered oil content phenotype due to altered expression of a HIO103 1 nucleic acid. The invention is further directed to methods of generating plants with an altered oil content phenotype using transgenics (abstract, para [0008]).

The different amino acid sequences represented by the peptide content of the subspecies and the different nucleic acid sequences represented by the nucleic acid content of the subspecies are different structures that are not common to one another but are different because they are composed of unique amino acid sequences and nucleic acid sequences. Thus, the various subspecies within Group I lack unity of invention because they do not share a same or corresponding special technical feature.