



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

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| <b>(51) International Patent Classification<sup>3</sup> :</b><br>A01C 1/00, 1/04; A01G 31/00<br>A01G 31/02  | <b>A1</b> | <b>(11) International Publication Number:</b> WO 82/ 03527<br><b>(43) International Publication Date:</b> 28 October 1982 (28.10.82)   |
| <b>(21) International Application Number:</b> PCT/DK82/00032<br><b>(22) International Filing Date:</b> 14 April 1982 (14.04.82)<br><b>(31) Priority Application Number:</b> 1733/81<br><b>(32) Priority Date:</b> 15 April 1981 (15.04.81)<br><b>(33) Priority Country:</b> DK<br><br><b>(71)(72) Applicants and Inventors:</b> AHM, Poul, Henrik [DK/ES]; 33-9.0, Paseo Maritimo, Malaga 16 (ES). RAS-MUSSEN, Jørgen, Zinkernagel [DK/ES]; 115, Urb. Monte Alto, Banalmadena Costa, Malaga (ES).<br><br><b>(74) Agent:</b> THE FIRM OF CHAS. HUDE; 33, H.C. Andersens Boulevard, DK-1553 Copenhagen V (DE).  |           | <b>(81) Designated States:</b> AU, BE (European patent), BR, CH (European patent), DE (European patent), FI, FR (European patent), GB (European patent), HU, JP, LK, NL (European patent), NO, RO, SE (European patent), SU.<br><br><b>Published</b><br><i>With international search report.</i> |
| <b>(54) Title:</b> A GERMINATOR AND THE USE OF TEXTILE MATERIAL FOR THE PRODUCTION OF A GERMINATOR<br><br><b>(57) Abstract</b><br><br>A germinator is formed by locating a plastic sheet cover around a textile material, preferably plant-'fibertex' <sup>R</sup> , being in contact with a seed, a sprout or a cutting. As a consequence of its distinct capillary effect the textile material ensures the sufficient amount of moisture during the beginning germination of a seed, and after bedding out of the germinated plant the surrounding plastic sheet cover protects the root or the roots against drying up for the first few days after the bedding out. |           |  |

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Title: "A Germinator and the Use of Textile Material for  
the Production of a Germinator"

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Technical Field

The present invention relates to a germinator and the  
5 use of textile material for the production of a germinator.

Background Art

In the growing of plants on the basis of planting stock  
capable of germinating, preferably seeds, said planting  
10 stock being developed far from the place of growing of  
the plants, it has long been known to use the so-called  
seed tapes. These seed tapes are put into the soil, and  
by virtue of the mutual distance of the seeds in the  
soil they ensure that the plants come up at an appropri-  
15 ate mutual distance in such a manner that the plants do  
not influence each other with respect to absorption of  
water and nutrients. It is generally known that the be-  
ginning germination of the seeds is of decisive impor-  
tance for a normal developing phase of the plants since  
20 unfavourable circumstances at the beginning germination  
have turned out to imply partly that many seeds do not  
germinate, and partly that the remaining germinating  
seeds result in plants not developing completely during  
otherwise good growing conditions, i.e. plants not yield-  
25 ing the crop usually achievable.

Thus it turned out that producers in countries like  
Saudi-Arabia and Kuwait only obtain a plant growth cor-  
responding to the seeds being capable of germinating as  
far as 50% are concerned when putting down seed tape  
30 comprising seeds appearing to be capable of germinating  
as far as 95% are concerned at a preceding control.



Disclosure of Invention

The low germinating percentage appeared to derive directly from lacking moisture during the beginning germination of the seed, and the object of the invention is therefore  
5 to overcome this problem.

Accordingly the invention deals with a germinator which is characterised by a plastic sheet cover around a textile material, preferably plant-"fibertex" <sup>®</sup>, being in contact with a seed, a sprout or a cutting.

10 As textile material any textile may be used which possesses the property that supply of water to one spot on the textile material ensures distribution of water to the remaining part of the material as a consequence of a distinct capillary effect through the material. The so-  
15 called plant-"fibertex" <sup>®</sup> is an example of such a material.

An embodiment of the germinator according to the invention is characterised by the plastic sheet cover surrounding a strip-shaped textile material like a sleeve  
20 open at both ends and in the flattened state having dimensions corresponding to the extension of the textile material.

The textile material may comprise one or more layers and can thus comprise two coherent layers folded about the  
25 seed, the sprout or the cutting.

In the flattened state the germinator may have a width of from about 2 to about 5 cm and a length of from about 4 cm to several metres, and the textile material may be up to about 3 cm longer than the plastic sheet cover.

30 Best Mode for Carrying Out the Invention



The germinator according to the invention may be produced in several different ways, e.g. as a tape through welding or glueing of two plastic sheet layers located on top of each other in areas of a width of a few mm transversely to the tape length, a perforation or another weakening line being produced in connection with the glueing or the welding for the separation of the individual germinators at the tearing off from the tape. The strip-shaped textile material may be inserted in the channels formed between the two plastic sheet layers upon the welding or the glueing, and they may also be located correspondingly prior to the welding or the glueing.

The seeds may be introduced into the germinators simultaneously with the textile material, but a separate introduction is also possible. All the above steps in the process of producing a germinator according to the invention may be carried out industrially in fully automatic production plants.

The germination of the seeds inserted in the germinators and located a few mm from the upper end of said germinators, is preferably carried out by locating the germinators in a layer of sand in such a manner that they incline about  $45^{\circ}$  relative to the vertical direction and with the upper end of the germinators almost flushing with the surface of the layer of sand.

The raising may subsequently take place by means of drip-watering, a plastic sheet being located under the layer of sand so as to maintain the moistness. When the sand has reached an appropriate moistness at the lower end of the germinators, the textile material ensures as a consequence of its distinct capillary effect an appropriate and continuous moistness around the seeds and the roots gradually growing downwards through the germinators and finally reaching the layer of sand under the germinators.

The germinating plants are subsequently ready for bedding out on the places of the actual development and growth, and the germinators are now located vertically in the soil with their upper ends almost flushing with the surface of the soil. The purpose of the plastic sheet cover is now to protect the root against drying up in the first few days after the bedding out, and according to the plant or kind of wood in question and to the nature of the soil the cover must be of such an appropriate length that the lower end is located so deeply in the soil that the projecting plant roots are in constant contact with moist soil.

In this manner the maximum number of seeds germinate, and by means of the germinator according to the invention it turned out to be possible to make almost 100% of the planted germinators grow into completely developed plants.

Furthermore, the germinator according to the invention turned out to permit attainment of particularly good crop results on the basis of a predetermined number of seeds capable of germinating, e.g. cucumber seeds and sugar beet seeds. Wood seeds of various kinds of wood also turned out to be suited for use in germinators according to the invention, including such kinds of wood seeds which upon an appropriate germination and succeeding development prior to the bedding out are bedded out on areas far from the germination place.

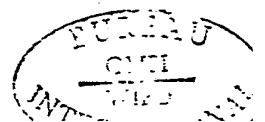
The textile material forming part of the germinator according to the invention acts so to speak as a root extender ensuring the necessary supply of moisture to the plant at its beginning developing steps, whereby dry periods otherwise could be destructive to the further development.



The invention furthermore relates to the use of textile material, preferably plant-"fibertex" <sup>®</sup>, as moistening contact material for or as cover around a seed, a sprout or a cutting, for the production of a germinator.

Claims:

1. A germinator, characterised by a plastic sheet cover around a textile material, preferably plant-"fibertex" <sup>®</sup>, being in contact with a seed, a sprout or a cutting.
2. A germinator as claimed in claim 1, characterised by the plastic sheet cover surrounding a strip-shaped textile material like a sleeve open at both ends and in the flattened state having dimensions corresponding to the extension of the textile material.
3. A germinator as claimed in claim 1 or 2, characterised by the textile material comprising two optionally coherent layers, the seed, the sprout or the cutting being located therebetween.
4. A germinator as claimed in claim 1, 2 or 3, characterised by having a width in the flattened state of from about 2 to about 5 cm and a length of from about 4 cm to several metres.
5. A germinator as claimed in any of the claims 1, 3 or 4, characterised by the textile material being 1 to 3 cm longer than the plastic sheet cover.
6. The use of textile material, preferably plant-"fibertex" <sup>®</sup>, as moistening material for or as cover around a seed, a sprout or a cutting, for the production of a germinator.





# INTERNATIONAL SEARCH REPORT

International Application No. PCT/IN92/00032

## I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) <sup>1</sup>

According to International Patent Classification (IPC) or to both National Classification and IPC <sup>3</sup>

A 01 C 1/00, 1/04; A 01 G 31/00, 31/02

## II. FIELDS SEARCHED

Minimum Documentation Searched <sup>4</sup>

Classification System

Classification Symbols

IPC 3 A 01 C 1/00, 1/04; A 01 G 31/00, 31/02

US Cl 47:35, 35.1, 56

Documentation Searched other than Minimum Documentation  
to the Extent that such Documents are Included in the Fields Searched <sup>5</sup>

SE, NO, DK, FI classes as above

## III. DOCUMENTS CONSIDERED TO BE RELEVANT <sup>14</sup>

| Category <sup>6</sup> | Citation of Document, <sup>15</sup> with indication, where appropriate, of the relevant passages <sup>17</sup> | Relevant to Claim No. <sup>18</sup> |
|-----------------------|--|-------------------------------------|
| X                     | DE, A, 2 908 615 (HYGRO INTERNATIONAL LTD)<br>20 September 1979  | 1-6                                 |
| Y                     | NO, B, 115 766 (ME-KOX INDUSTRI)<br>25 November 1968   | 1-6                                 |
| Y                     | US, A, 1 172 787 (MACOMB B GRAY)<br>22 February 1916   | 1-6                                 |
| Y                     | US, A, 2 026 322 (MORRIS A RAINES)<br>31 December 1935   | 1-6                                 |
| Y                     | US, A, 3 172 234 (BRIAN WYNDHAM EAVIS)<br>9 March 1965   | 1-6                                 |
| X                     | US, A, 3 241 264 (FREDERIC E PORTER ET AL)<br>22 March 1966  | 1-6                                 |
| Y                     | US, A, 3 456 386 (HERBERT K HOLDEN)<br>22 July 1969  | 1-6                                 |

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## IV. CERTIFICATION

Date of the Actual Completion of the International Search <sup>1</sup>

1982-07-09

International Searching Authority <sup>1</sup>

Swedish Patent Office

Date of Mailing of this International Search Report <sup>1</sup>

1982-07-19

Signature of Authorized Officer <sup>12</sup>

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BAD ORIGINAL