A PLANTING AID PRODUCT

A planting aid product comprising a container comprising an annular compartment for water with a downwardly tapering outer wall and an upwardly tapering inner wall defining a central open channel, where in use a plant is positioned. The upwardly tapering inner wall and the downwardly tapering outer wall are composed of a biodegradable pulp. The upwardly tapering inner wall is more water permeable than the downwardly tapering outer wall.

Dit octrooi is verleend ongeacht het bijgevoegde resultaat van het onderzoek naar de stand van de techniek en schriftelijke opinie. Het octrooischrift komt overeen met de oorspronkelijk ingediende stukken.
A PLANTING AID PRODUCT

The invention is directed to a planting aid product comprising a container comprising an annular compartment for water with a downwardly tapering outer wall and an upwardly tapering inner wall defining a central open channel. A lid closes the upper open end of the annular compartment. In use the planting product is buried together with a plant as positioned in this central open channel. Water as present in the annular compartment is slowly fed to the plant enabling the plant to grow.

WO2015/063243 describes such a planting aid product. This planting aid product is further provided with a wick made of a capillary material to slowly transport water from the annular compartment to the roots of the plant as present in the central channel. The planting aid product is made of a biodegradable pulp. This material will disintegrate in time and become one with the surrounding soil.

A disadvantage of using a wick is that it requires careful positioning when the planting apparatus and the plant are buried into the ground. In practice it has been found that part of a group of plants as planted with this planting aid product did not grow because of an incorrect positioning of the wick.

The aim of the present invention is to provide a planting aid product which is simpler in use thereby achieving that more plants are successfully planted.

This is achieved with the following planting aid product. A planting aid product comprising

- a lid,
- a container comprising an annular compartment for water with a downwardly tapering outer wall and an upwardly tapering inner wall defining a central open channel, where in use a plant is positioned, wherein the annular compartment is closed at its lower end and open at its upper end,
wherein the lid closes the upper open end of the annular compartment and wherein the lid has a central opening which opening aligns with the central open channel of the container,
wherein the upwardly tapering inner wall and the downwardly tapering outer wall are composed of a biodegradable pulp,
wherein the upwardly tapering inner wall is more water permeable than the downwardly tapering outer wall.

Applicants have found that water may be conveniently transported to the roots of the plant via a water permeable inner wall. It has been found possible to dose the water from the container to the roots of the plant in a controllable and effective manner via the water permeable upwardly tapering inner wall. This simplifies the use of the planting aid product because a wick may be omitted.

The upwardly tapering inner wall is more water permeable than the downwardly tapering outer wall. This avoids that water is transported to areas where no roots are present of the plant and where most of the water is transported to the plant as present the central open channel. By more water permeable is meant that more water will flow at a time via the total area of the inner wall area which is exposed to water in the annual compartment than water will flow via the total area of the outer wall which is exposed to water in the annual compartment. The inner wall and the outer wall are defined such that they have a lower starting point which is the lowest point of the annular compartment or half way any flat lower end of the annular compartment. The water permeability of the inner wall may be achieved by locally increasing the water permeability, for example only the lower part of the inner wall, or by increasing the water permeability of the entire inner wall.

In use the planting aid product will have to release the water present in the annular compartment over a desired time period of between 1 and 12 months to the plant. At the start most of the water will flow via the lower end of the inner wall due to the local high hydrostatic pressure. In time this pressure will decrease when the water level decreases and the water permeability of the inner wall increases. These combined effects result in that the
flow of water through the inner wall can be substantially constant over time or steadily increasing. The latter is more preferred because a growing plant will require more water in time. The biodegradable pulp material of the wall will become soggy and will let water pass the wall more easily. Preferably the water permeability of the upwardly tapering inner wall is at least 0.05 litre/day as measured 5 days after the annular compartment is filled water to 95% of its vertical height.

The upwardly tapering inner wall and the downwardly tapering outer wall are composed of a biodegradable pulp. Preferably the container and the lid are composed of a biodegradable pulp. Suitable biodegradable materials are for example bio-degradable polymers such as PLA (poly lactic acid). Preferably the biodegradable material is biodegradable pulp which may be made from a biodegradable lignocellulosic fibrous material. Typically such lignocellulosic fibrous material is obtained by chemically or mechanically separating the cellulose fibres from wood, waste of crops, fibre crops or waste paper, especially waste carton. Examples of fibre crops are Miscanthus spp, Bamboo (Bambusoideae spp) or Guayule (Parthenium argentatum).

Suitably the difference in water permeability of the inner and outer wall is at least in part a result of a lower solid density expressed in weight per volume of the biodegradable pulp material of the inner wall or parts of the inner wall as compared to the solid density of the outer wall. The variation in water permeability of a wall composed of biodegradable pulp is found dependent of the solid density of the wall. As will be explained in more detail below applicants found that this solid density may be varied by for example pressing a wall of biodegradable pulp in a mould. By pressing harder the solid density of the wall will increase and the water permeability will decrease.

The walls of the container may comprise a water-resistant compound which is evenly distributed within the walls or evenly distributed as a coating on the walls. An evenly distributed water-resistant compound within the walls may be obtained by adding a water-resistant compound, such as a wax, to the emulsion containing pulp fibres as described in WO2015/063243. Examples of such processes are described in GB456434 and GB276395. A coating of a water-resistant compound may be sprayed on the walls of the container as will
be described below in more detail. The walls of the container and/or lid product of the planting aid product may further comprise additives such as bio-repellents or plant based pesticides to protect the container pulp product against insects and small mammals. Example of a suitable bio-repellent is capsaicin.

The difference in water permeability of the inner and outer wall may achieved alone or in combination with the above described difference in solid density by having a downwardly tapering outer wall comprising of a water-resistant compound which may be present on or in the wall. The upwardly tapering inner wall may optionally comprise a water-resistant compound on or in the wall. The difference in water permeability of the inner and outer wall will depend on the content, the quality and/or the position of the water-resistant compound in or on the inner and outer walls. By difference in quality is meant that the compounds used have a different chemical structure. Preferably the water-resistant compound is present on the surface of the walls. This results in walls which are more water resistant as compared to walls having evenly distributed water-resistant compound within the walls. Further it is easier to make such a product having variations in water-resistant compound as will be described further below which enhance the difference of the water permeability between outer and inner walls.

The water-resistant compound is preferably a hydrophobic compound. The compound may be added as a liquid which solidifies in or on the final product or added as a reactive composition which cures in or on the final product. A water-resistant compound which may be added as a liquid preferably have a melting point of above 40 °C and more preferably above 60 °C and preferably below 200 °C. Preferably such water-resistant compound is a wax. Waxes having the desired melting points are known to achieve a good water-resistance. The wax may be a petroleum or natural derived paraffin or microwax or a mixture thereof. Optionally the wax may be obtained by a Fischer-Tropsch reaction starting from hydrogen and carbon monoxide. The melting temperature of the wax may be between 60°C and 120°C and preferably between 70 and 120 °C. Reactive compositions are preferably biodegradable compositions such as cross-linked polysaccharide derivates.
The amount of water-resistant compound applied per surface area of the lid pulp product can be easily determined by the skilled person. For a typical wax having the preferred melting properties as described the amount of wax may be between 5 and 1000 g/m² and more preferably between 50 and 600 g/m². Wall parts having a higher water permeability may have a wax content of between 5 and 50 g/m² in combination with an outer wall having a wax content of more than 100, preferably more than 200 and even more preferably more than 400 g/m².

Suitably no wick is present to transport water from the annular compartment to the plant in the central channel. The planting aid product is advantageous because it does not require a wick to transport water from the annular compartment to the plant. This however does not prevent one to also use a wick in the planting aid product although it is preferred that no wick is present or required to transport water from the annular compartment to the plant in the central channel. By a wick is here meant any means which uses capillary forces to direct water in an upwardly direction from the annular compartment by capillary forces.

A disadvantage of using a wick is that it requires careful positioning when the planting apparatus and the plant are buried into the ground. Furthermore wicks may become contaminated with for example salts which negatively influence the capillary working of the wick. Especially biodegradable wicks are sensitive for degradation due to microorganisms. The most suited wicks are therefore not biodegradable which is however not desired in this product. Furthermore, in practice it has been found that part of a group of plants as planted with this planting aid product did not grow because of an incorrect positioning of the wick. So by being able to use the product without the wick a more reliable and simpler to use product is obtained. A further advantage is that the root collar of the plant can now be positioned lower relative to the planting aid product. The root collar may now even be positioned at the level of the lower end of the annular compartment instead of about half way the central open channel. This simplifies the planting procedure and avoids failures. Such positioning would be more complex or even not possible when a wick is used to transport the water to the plant.
The invention is also directed to the use of a planting aid product according to the invention as here described or as obtained by any one of the above described processes to provide a plant in the central channel with water from the annular compartment over a period of time of at least one month wherein the majority of water transported from the annular compartment to the plant in the period of time flows via the water permeable upwardly tapering inner wall of the planting aid product.

Applicants have developed a new process which enables to vary the local water permeability in the walls of the planting aid product. The invention is also directed to the following process.

A process to prepare a biodegradable pulp container of a planting aid product according to the invention, comprising the following steps:

(a) forming an intermediate container product in a pulping process and drying the intermediate container product,

(b) pressing the intermediate container product as obtained in step (a) in a mould such that the pressure applied in the mould on the upwardly tapering inner wall is less or locally less than the pressure applied in the mould on the downwardly tapering outer wall, and

(c) releasing the container from the mould.

Because of this pressure difference the upwardly tapering inner wall or parts of the inner wall will have a lower solid density as compared to the solid density of the downwardly tapering outer wall in the container obtained in step (c). This in turn results in that a product is obtained wherein the upwardly tapering inner wall is more water permeable than the downwardly tapering outer wall. When parts of the wall are pressed less than outer parts it is preferred to press the lower part of the upwardly tapering inner wall less than the other wall parts. This lower part has the shape of a slice of the wall.

The pressure in step (b) as exercised on the lid pulp product is preferably above 0.1 MPa and more preferably above 1 MPa. Suitably the pressure is below 5 MPa and more preferably below 2 MPa. The difference in pressure applied on the upwardly tapering inner wall and the downwardly tapering outer wall may be between .0.2 and 2 MPa.
The pressure applied on the inner upwardly tapering wall may be locally lower than the pressure applied on the other parts of the container. This may be achieved by adding recesses to the mould at locations where a lower pressure is desired.

A water-resistant compound as described above may be added in the pulping process resulting in an intermediate container product comprising an evenly distributed water-resistant compound. Preferably or in addition to adding a water-resistant compound in the pulping process a coating comprising of a water-resistant compound may be applied on the surface of the dried intermediate container product obtained in step (a). The temperature at which the coating is applied is preferably above the melting temperature of the water-resistant compound in case the compound is added as a liquid and solidifies as a coating on the walls of the product. In such a process the temperature is suitably reduced to below the melting temperature of the water-resistant compound in step (c). The water-resistant compound is preferably a wax having a melting temperature of above 60 °C. When the water-resistant compound is added as a reactive composition the temperature is preferably around the optimal curing temperature of such a composition.

The difference in water permeability of the upwardly tapering inner wall and the downwardly tapering outer wall may be further enhanced by varying the content, quality and/or position of the water-resistant compound as applied as coating on the upwardly tapering inner wall and downwardly tapering outer wall. By position is also meant that the coating may be applied with different amounts on the inside and outside of a wall. The inside in this case faces the annular compartment.

In step (a) a liquid water-resistant compound, preferably a wax, may be sprayed on the surface of the outer and optionally inner walls of the container. The container is preferably dry such that the water-resistant compound can easily adhere and even absorb into the pulp material.

The bio-repellents or plant based pesticides additives may be added to the emulsion containing pulp fibres when preparing a container and/or lid pulp product. Preferably such additives are added to the water-resistant compound when they are added to the product
as a coating. In this manner they will be deposited at or close to the surface of the biodegradable lid pulp product which will enhance their function as resistant to insects and the like.

Figure 1 shows a container 2 of a planting aid product 1. The container 2 has a an annular compartment 4 for water with a downwardly tapering outer wall 5 and an upwardly tapering inner wall 6 defining a central open channel 7. In channel 7 a plant may be positioned as shown in Figure 2. The annular compartment 4 is closed at its lower end 8 and open at its upper end 9. A lid 3 as shown in Figure 2 closes the upper open end 9 of the annular compartment 4.

Figure 2 shows a schematic cross-section of the container 2 of Figure 1 in combination with a plant 10 and a lid 3. A shroud 12 surrounds the plant to protect the young plant. Shroud 12 is provided with openings 11 for admitting light and may be as described in WO2015/063243. The lid 3 is a circular lid having a central opening 13 which opening aligns with the central open channel 7 of the container 2. The annular compartment 4 is filled with water having water level 14. Because the water permeability of the upwardly tapering inner wall 6 is substantially higher than the water permeability of the downwardly tapering outer wall 5 a flow of water will result which substantially flows via the inner walls 6 as illustrated by arrows 15. Because no wick is used it is possible to position the root collar 16 of plant 10 at the level of the lower end 8 of the annular compartment 4. Further a soil level 17, which is about flush with the lid 3, is shown to illustrate how the planting aid product 1 is used.

Example 1

A container as shown in Figure 1 was made from waste carton fibre pulp. The outer wall surface of the outer wall, the inner wall surface of the annular compartment and the outer wall surface of the inner wall is sprayed with liquid wax, which was a mixture of refined hydrocarbon waxes, having a melting point of 85 °C. The temperature of the liquid wax as provided to the spraying gun was 120 °C. The amount of wax sprayed on the surface of the planting apparatus was about 100 g/m2. The temperature was allowed to decrease to ambient temperatures such that the wax solidified. The planting apparatus thus obtained was placed in a mould at 125 °C for 15 seconds and wherein the two mould halves were
pressed together at a moderate pressure of 0.25 MPa. The product was released from the mould and the temperature was reduced to ambient temperatures such that the wax solidified. The thickness of the wall was 3 mm.

Example 2

Example 1 was repeated except that the obtained waxed planting apparatus obtained in Example 1 was placed in a mould at 125 °C for 15 seconds and wherein the two mould halves were pressed together at a pressure of 1.5 MPa. The product was released from the mould and the temperature was reduced to ambient temperatures such that the wax solidified. The thickness of the wall was 2 mm.

Example 3

From the planting apparatuses as obtained in Examples 1-2 a circular cut out was obtained and fixed at the lower open end of a 5 cm diameter tube. The tubes were filled with a layer of 100 cm water and the decrease in water level was measured over time. The results are listed in Table 1. For comparison also a cut out of the starting planting apparatus was obtained, ie not treated with wax. This cut out was also fixed to a tube and filled with 100 cm water.

Table 1

<table>
<thead>
<tr>
<th>Product – subjected to 100 cm water column pressure</th>
<th>Standard material (no wax, with hot press)</th>
<th>Example 1 (with wax and hot press (low pressure))</th>
<th>Example 2 (with wax and hot press (high pressure))</th>
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<tr>
<td>Thickness of wall (mm)</td>
<td>4</td>
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<td>Water level after 10 minutes (cm)</td>
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<td>100,0</td>
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<td>Water level after 60 minutes (cm)</td>
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<td>Water level after 1440 minutes (cm)</td>
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<td>91,5</td>
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The results in Table 1 show that a pulp wall can be made (Example 1) which has a higher water permeability than a wall pressed at a higher pressure (Example 2). Further the effect of a wax coating on the water permeability is shown.
CONCLUSIES

1. Planthulpmiddel, omvattende:
   een deksel,
   een container die een ringvormig compartiment voor water omvat, met een neerwaarts taps toelopende buitenste wand en een opwaarts taps toelopende binnenste wand die een centraal open kanaal definiëren, waarin, tijdens het gebruik, een plant is gepositioneerd, waarbij het ringvormige compartiment gesloten is aan het onderste einde ervan en open is aan het bovenste einde ervan,
   waarbij het deksel het bovenste open einde van het ringvormige compartiment afsluit, en waarbij het deksel een centrale opening omvat, waarbij deze opening is uitgevoerd ten opzichte van het centrale open kanaal van de container,
   waarbij de opwaarts taps toelopende binnenste wand en de neerwaarts taps toelopende buitenste wand gevormd zijn uit een biodegradeerbare pulp,
   waarbij de opwaarts taps toelopende binnenste wand meer waterdoorlaatbaar is dan de neerwaarts taps toelopende buitenste wand.

2. Planthulpmiddel volgens conclusie 1, waarbij het verschil in waterdoorlaatbaarheid van de binnenste en van de buitenste wand ten minste gedeeltelijk het resultaat is van een lagere vaste dichtheid, uitgedrukt in gewicht per volume, van het biodegradeerbare pulpmateriaal van de binnenste wand of van delen van de buitenste wand, ten opzichte van de vaste dichtheid van de buitenste wand.

3. Planthulpmiddel volgens conclusie 1, waarbij de waterdoorlaatbaarheid van de opwaarts taps toelopende binnenste wand ten minste 0,05 l/dag bedraagt, gemeten vijf dagen nadat het ringvormige compartiment gevuld werd met water tot 95% van de verticale hoogte ervan.

4. Planthulpmiddel volgens een der conclusies 1 tot en met 3, waarbij de neerwaarts taps toelopende buitenste wand een waterresistente verbinding omvat, en waarbij de
opwaarts taps toelopende binnenste wand een waterresistente verbinding kan omvatten, en waarbij het verschil in waterdoorlaatbaarheid van de binnenste en van de buitenste wand ten minste gedeeltelijk het gevolg is van een verschil in de inhoud, de kwaliteit, en/of de positie van de waterresistente verbinding in of op de binnenste en buitenste wanden.

5. Planthulpmiddel volgens een der conclusies 1 tot en met 4, waarbij geen wiek aanwezig is om water te transporteren van het ringvormige compartiment naar de plant in het centrale kanaal.

6. Werkwijze voor het voorbereiden van een container uit biodegradeerbare pulp, van een planthulpmiddel volgens een der conclusies 1 tot en met 5, de volgende stappen omvattend:
   a. het vormen van een intermediair containerproduct met behulp van een pulpwerkwijze, en het drogen van het intermediaire containerproduct,
   b. het persen van het intermediaire containerproduct zoals dat verkregen werd in stap (a) in een vorm, zodat de druk die in de vorm wordt uitgeoefend op de opwaarts taps toelopende binnenste wand kleiner is dan of plaatselijk kleiner is dan de druk die wordt uitgeoefend in de vorm op de neerwaarts taps toelopende buitenste wand, met als gevolg dat de opwaarts taps toelopende binnenste wand of delen van de binnenste wand een lagere vaste dichtheid heeft of hebben in vergelijking met de vaste dichtheid van de neerwaarts taps toelopende wand in de container zoals die verkregen werd in stap (c), en
   c. het vrijgeven van de container uit de vorm.

7. Werkwijze volgens conclusie 6, waarbij een waterresistente verbinding wordt toegevoegd in de pulpwerkwijze, met als resultaat een intermediair containerproduct dat een gelijkmatig verdeelde waterresistente verbinding omvat.

8. Werkwijze volgens conclusie 6 of conclusie 7, waarbij op het oppervlak van het gedroogde intermediaire containerproduct zoals dat verkregen werd in stap (a), een
waterresistente verbinding wordt gesproeid met een smelttemperatuur die hoger ligt dan 60 °C, alvorens stap (b) uit te voeren, en waarbij de temperatuur waarbij stap (b) wordt uitgevoerd hoger is gelegen dan de smelttemperatuur van de waterresistente verbinding.

9. Werkwijze volgens conclusie 8, waarbij het gehalte, de kwaliteit, en/of de positie van de waterresistente verbinding zoals die op de opwaarts taps toelopende binnenste wand en op de neerwaarts taps toelopende buitenste wand wordt gesproeid, wordt of worden gevarieerd, ten minste gedeeltelijk op een zodanige wijze dat de waterdoorlaatbaarheid van de opwaarts taps toelopende binnenste wand hoger is dan die van de neerwaarts taps toelopende buitenste wand.

10. Werkwijze volgens een der conclusies 7 tot en met 9, waarbij in stap (c) de temperatuur wordt gereduceerd tot onder de smelttemperatuur van de waterresistente verbinding.

11. Werkwijze volgens een der conclusies 7 tot en met 10, waarbij de waterresistente verbinding een was is die in het bezit is van een smelttemperatuur die hoger ligt dan 60 °C.

12. Gebruik van een planthulpmiddel volgens een der conclusies 1 tot en met 5, of een planthulpmiddel zoals verkregen aan de hand van een werkwijze volgens een der conclusies 6 tot en met 11, om een plant in het centrale kanaal te voorzien van water uit het ringvormige compartiment, over een periode van ten minste één maand, waarbij het grootste deel van het water vanuit het ringvormige compartiment naar de plant wordt getransporteerd tijdens de periode in kwestie via de waterdoorlaatbare en in opwaartse richting taps toelopende, binnenste wand van het planthulpmiddel.
ABSTRACT

A planting aid product comprising a container comprising an annular compartment for water with a downwardly tapering outer wall and an upwardly tapering inner wall defining a central open channel, where in use a plant is positioned. The upwardly tapering inner wall and the downwardly tapering outer wall are composed of a biodegradable pulp. The upwardly tapering inner wall is more water permeable than the downwardly tapering outer wall.
**SAMENWERKINGSVERDRAG (PCT)**

**RAPPORT BETREFFENDE NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE**

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**Aanvrager (Naam):**

**LAND LIFE COMPANY B.V.**

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I. **CLASSIFICATIE VAN HET ONDERWERP** (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven)

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II. **ONDERZOCHTE GEBIEDEN VAN DE TECHNIEK**

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Onderzochte andere documentatie dan de minimum documentatie, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen.

III. **GEEN ONDERZOEK MOGELIJK VOOR BEPAALDE CONCLUSIES** (opmerkingen op aanvullingsblad)

IV. **GEBREK AAN EENHEID VAN UITVINDING** (opmerkingen op aanvullingsblad)

Form PCT/ISA 201 A (11/2000)
ONDERZOEKRAPPORT BETREFFENDE HET
RESULTAAT VAN HET ONDERZOEK NAAR DE STAND
VAN DE TECHNIEK VAN HET INTERNATIONALE TYPE

Nummer van het verzoek om een onderzoek naar
de stand van de techniek
NL 20200650

A. CLASSIFICATIE VAN HET ONDERWERP
INV. A01G9/029 A01G13/02 A01G27/02 D21J1/08
ADD.

Volgens de Internationale Classificatie van onttrekken (IPC) of zowel volgens de nationale classificatie als volgens de IPC.

B. ONDERZOEKDE GEBIEDEN VAN DE TECHNIEK

Onderzochte minimum documentatie (classificatie gevolgd door classificatiesymbolen)
A01G D21J

Onderzochte andere documentatie dan de minimum documentatie, voor dergelijke documenten, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen

Tijdens het onderzoek geraadpleegde elektronische gegevensbestanden (naam van de gegevensbestanden en, waar uitvoerig, gebruikte trefwoorden)
EPO-Internal, WPI Data

C. VAN BELANG GEACHTDE DOCUMENTEN

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☐ Verdere documenten worden vermeld in het vervolg van vak C.
☒ Leden van dezelfde ootroefamilie zijn vermeld in een bijlage

* Speciale categorieën van aangehaalde documenten

"A" niet tot de categorie X of Y behorende literatuur die de stand van de techniek beschrijft
"D" in de ootroefamilie vermeld
"E" erderd ootroefamilie, gepubliceerd op of na de indieningsdatum, waarin dezelfde uitvinding wordt beschreven
"L" om andere redenen vermeldte literatuur
"O" niet-schrijvende stand van de techniek
"P" tussen de voorrangssituatie en de indieningsdatum gepubliceerde literatuur

Datum waarop het onderzoek naar de stand van de techniek van internationaal type werd voltooid
8 augustus 2018

Naam en adres van de instantie
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Fax (+31-70) 340-3016

De bevoegde ambtenaar
Nédélec, Morgan

Formulier PCT/IS/201 (tweede blad) (Januari 2004)
<table>
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This opinion contains indications relating to the following items:

- Box No. I  Basis of the opinion
- Box No. II  Priority
- Box No. III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV  Lack of unity of invention
- Box No. V  Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI  Certain documents cited
- Box No. VII  Certain defects in the application
- Box No. VIII  Certain observations on the application

Examiner

Nédélec, Morgan
Box No. I  Basis of this opinion

1. This opinion has been established on the basis of the latest set of claims filed before the start of the search.

2. With regard to any nucleotide and/or amino acid sequence disclosed in the application and necessary to the claimed invention, this opinion has been established on the basis of:
   a. type of material:
      ☐ a sequence listing
      ☐ table(s) related to the sequence listing
   b. format of material:
      ☐ on paper
      ☐ in electronic form
   c. time of filing/furnishing:
      ☐ contained in the application as filed.
      ☐ filed together with the application in electronic form.
      ☐ furnished subsequently for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto 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.

4. Additional comments:

Box No. V  Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

   Novelty
   Yes: Claims 1-12
   No: Claims

   Inventive step
   Yes: Claims 6-11
   No: Claims 1-5, 12

   Industrial applicability
   Yes: Claims 1-12
   No: Claims

2. Citations and explanations

   see separate sheet

NL237B (July 2006)
Box No. VII  Certain defects in the application

see separate sheet

Box No. VIII  Certain observations on the application

see separate sheet
Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:


D2  US 4 928 426 A (JANSSENS LUC [BE]) 29 mei 1990 (1990-05-29)

1  Inventive Step

The present application does not meet the criteria of patentability, because the subject-matter of claims 1-5 does not involve an inventive step.

1.1  D1 (fig. 10-12) is regarded as being the prior art closest to the subject-matter of claim 1, and discloses

    Plant helpmiddel (p. 1, l. 4-6), omvattende:

    een deksel (1),

    een container (10) die een ringvormig compartiment voor water omvat, met een neerwaarts taps toelopende buitenste wand en een opwaarts taps toelopende binnenste wand die een centraal open kanaal definiëren, waarin, tijdens het gebruik, een plant is gepositioneerd, waarbij het ringvormige compartiment gesloten is aan het onderste einde ervan en open is aan het bovenste einde ervan,

As seen in figure 10 of D1, the device discloses tapered outer and inner walls, wherein the taper of the respective walls is inverted. Furthermore, a central bore 34 is provided for receiving a plant (p. 10, l. 24-26).

    waarbij het deksel het bovenste open einde van het ringvormige compartiment afsluit,

figure 11

    en waarbij het deksel een centrale opening omvat, waarbij deze opening is uitgelijnd ten opzichte van het centrale open kanaal van de container,
waarbij de opwaarts taps toelopende binnenste wand en de neerwaarts taps toelopende buitenste wand gevormd zijn uit een biodegradeerbare pulp.

At p. 7, l. 20-22 it is discloses that the whole structure is preferably made from cellulose or paper, which both originate from a pulp material.

The subject-matter of claim 1 therefore differs from this known structure in that

\[ \text{de opwaarts taps toelopende binnenste wand meer waterdoorlaatbaar is dan de neerwaarts taps toelopende buitenste wand} \]

and is therefore new.

The technical problem that the current application sets itself to solve, i.e. the obviation of complexity relating to irrigation systems relying on wicks is already solved by this prior art document, as described at p. 22, l. 20-22.

It is therefore justified, the reformulate the objective technical problem, which is considered to be providing for targeted and controlled irrigation of the plant that is surrounded by the structure.

The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step for the following reasons:

In D1 it is disclosed, that all of the side walls and the bottom wall may have a predefined permeability for water, that may or may not be selectively adapted (p. 21, l. 24-p. 22, l. 2). Furthermore it is discloses, that the perimeter walls of the container may be fully or partially coated. This provides the skilled person with a limited amount of equally likely and (partially also) known alternatives. It is clear, that the skilled person would arrive at the solution of claim 1 without applying inventive skill, since it is known in the art, to provide water storage devices for plants, having an inner side wall with a higher water permeability than the outer side wall (see D2, fig. 2, col. 3, l. 50-53).

1.2 Claim 12 is a use claim that puts a product to use, which is described as a to be obtained by a certain process. It is therefore considered, that the limiting features are those from the product itself, rather than those of the process.

The product according to claim 1 is not inventive, as discussed here above. The additional features of claim 12 are mere obvious selections, since they relate to parameters that the skilled person would readily chose to arrive at the desired technical effect.

It therefore lacks an inventive step.
1.3 Dependent claims 2-5 do not contain any features which, in combination with
the features of any claim to which they refer, meet the requirements of
inventive step.

1.4 For claim 2 see D1 in combination with D2, wherein in D2 cement is used in
to cast the planting aid. For the permeable shell a higher water proportion is
used, such, that the overall density of the inner wall is lower, than the density
of the outer wall (see col. 2, l. 39-42).

1.4.1 The subject-matter of claim 3 is the mere result of a normal design
procedure.

1.4.2 For claim 4 see D1 in combination with D2, wherein in D2 it is disclosed, that
the impermeability can be achieved by coating the respective (portion of the)
wall; c.f. p. 21, l. 24-p. 22, l. 2.

1.4.3 For claim 5 see D1 in combination with D2, wherein it is unambiguously
stated, that one of the advantages of the device is that a wick becomes
obsolete p. 22, l. 20-22.

2 Positive Assessment

2.1 The prior art at hand does not disclose the production method according to
claim 6 of the present invention.

D1 is rather silent about the details of the production process. It is mentioned,
however, that the water permeability of the wally may be obtained by piercing
the material with needles. Since no material is removed during this process,
the density of the respective pierced wall would remain the substantially
unchanged with regard to the original unpierced state.

D2 relates to a planting aid made from cement, which is usually cast and not
pressed. Although the resulting density of the inner side wall is lower than the
density of the outer side wall, D2 simply cannot disclose a production
process, applying lower or higher pressure respectively to achieve the desired
density.

2.2 Claim 12 relates to the use of the product of claims 1-5 as obtained by the
inventive process here above

The subject-matter of claim 6 and claims 7-11 which are dependent on said
claim, are considered to be new and inventive.

Re Item VII
Certain defects in the application

The relevant background art disclosed in D1 is not mentioned in the description, nor is this document identified therein.

Re Item VIII

Certain observations on the application

3 Claim 1 is not clear because it lacks an essential feature. The technical problem that the present application sets itself to solve is to make the use of wicks obsolete. The wicks are describes to make the handling of the devices more complex and cumbersome. The skilled person will therefore understand that it is desirable to avoid using wicks. However, the use of wicks is not excluded in claim 1, as also hinted at by the disclaimer type claim 5. Although a device according to claim 1 ensures proper irrigation, a theoretically present wick would still impede handling. It is therefore highly questionable, if the combination of features of claim 1 solves the underlying technical problem formulated in the application itself, since this disclaimer is missing.

4 Claim 12 is partially drafted as result to be achieved. It remains unclear, how the skilled person will achieve that the plant will mainly be irrigated by perspiration through the porous inner side wall of the water storage.