A method of breeding young plants and a plant breeding system.

The invention relates to a method of breeding young plants, comprising the steps of selecting a young plant and retrieving information from a soil structure wherein the young plant is to be planted. The method also includes the step of providing a structure for facilitating growth of a young plant, wherein the base material from which the structure is made includes disseminatable additives dedicated to the young plant and/or to the soil structure where the young plant is to be planted.
A method of breeding young plants and a plant breeding system

The invention relates to a method of breeding young plants.

International patent application PCT/NL/2010/050581 discloses an irrigating system that can serve as a plant breeding system for irrigating young plants or seeds.

In order to breed young plants successfully in different soil species on Earth, it might be desirable to change the composition of the soil since not all soil types match soil conditions that enable optimal growth of a young plant. Changing a soil’s composition can be performed by a pre-treatment process, before actually planting the plant. Then, the plant can be planted and a plant facilitating system, such an irrigating system, can be placed to improve growth conditions for the young plant, especially in areas that are exposed to relatively extreme weather conditions, such as dry or rocky subsoil.

However, pre-treating the soil might be expensive and/or complex.

It is an object of the invention to provide a method of breeding young plants wherein the soil composition is changed without pre-treating the soil. Thereto, method according to the invention includes the steps of selecting a young plant, retrieving information from a soil structure wherein the young plant is to be planted, providing a structure for facilitating growth of a young plant, wherein the structure includes disseminatable additives dedicated to the young plant and/or to the soil structure where the young plant is to be planted.

By including disseminatable additives in the structure, the ground composition can be changed, e.g. in terms of acid degree, salt degree and/or lime degree, by simply placing the structure near the plant. The process of pre-treating the soil can now be omitted, thereby saving effort and costs.

Further, by including disseminatable additives, such as an aromatic substance, a flavouring such as camphor, chili, pepper or garlic, a fertilizer, mycorrhizae, anti-fungal material, an insecticide, fungi, animal
urine or excrements such as elephant excrements, baits such as sugar, honey and/or syrup, and/or dried plant parts, such as dried Melaleuca species, dried Taxodidium species and/or dried Juniperus species, the environment can be influenced, e.g. by chasing away harmful animals, thereby further increasing growing conditions for the young plant.

Specifically, by including animal urine or excrements, harmful animals can be chased away. On the other hand, by including baits, specific animals such as bees can be attracted to the young plant.

By selecting seeds, symbiotic bacteria, eggs, nutrients and/or spores as additives, the young plant can be provided with organic material that is beneficial and dedicated to the specific plant species.

Also harmful animal damaging material, such as glass grindings, sand grindings, metal grindings, cement, lime, silicon and/or rubber can be included in the additives.

The structure may include an irrigating system and/or a plant tray including a cup for retaining the young plant, and can be made from biodegradable material and/or pulp to reducing manufacturing costs and keep environmental impact low. By using biodegradable material the additives, if integrated with the base material which then serves as an agent, can be disseminated in a dosed manner.

By coating the structure with a coating layer including additives dedicated to the young plant and/or to the soil structure where the young plant is to be planted, a standardized structure can be made suitable for use in a specific area on Earth by applying a last manufacturing step. The coating step can be performed centrally in a manufacturing site or locally, near or at the specific planting area. It is noted that also the standardized structure can be provided with additives.

Further, the structure can be provided with a colour. Here, a first structure having a first additive composition can be provided with a first colour while a second structure having a second additive composition,
different from the first additive composition, can be provided with a second
colour, different from the first colour. Thereby, the structures are optically
easily distinguishable for their purpose.

The colour can be provided by applying a coloured top layer on the
structure, e.g. by a painting process. However, the colour can also be
provided otherwise, e.g. by penetrating the structure with coloured
particles. As an example, if the structure is made from pulp, the material
can be soaked through by a colour (dye) stuff.

By colouring the breeding systems, a person applying the system
can easily determine which system can be used in a specific area or for
breeding a specific plant. Preferably, the specific colour of the system can be
chosen such that the person handling the systems directly associates the
system with an intended soil type or other area circumstances where the
young plant is to be planted. As an example, a yellow system might be
intended for use in a sand desert, while a gray system might be intended for
use in rocky soils. By colouring the systems with a colour that is naturally
associated with a particular soil type, the application of the different
systems is made so simple, that a chance of taking a wrong system is almost
zero. The systems can also be used by less skilled persons, or even by
illiterate persons.

The top layer and the coating layer discussed above can be
integrated. However, the layers can also be applied separately, or only one
of the layer types can be applied.

Further advantageous embodiments according to the invention are
described in the following claims.

The invention also relates to a breeding system.

By way of example only, embodiments of the present invention will
now be described with reference to the accompanying figures in which

Fig. 1 shows a schematic perspective cross sectional view of a first
embodiment of a plant breeding system according to the invention;
Fig. 2 shows a schematic perspective top view of a second embodiment of a plant breeding system according to the invention;

Fig. 3 shows a flow chart of an embodiment of a method according to the invention.

It is noted that the figures show merely preferred embodiments according to the invention. In the figures, the same reference numbers refer to equal or corresponding parts.

Figure 1 shows a schematic perspective cross sectional view of a first embodiment of a plant breeding system 1 according to the invention.

The system is implemented as an irrigating system 1 that comprises a collection structure 99 for collecting moisture present in the atmosphere, wherein the collection structure 99 is provided with a water recovery surface 24 which during use at least partly makes an angle with respect to the orientation of gravity. The system 1 also includes a reservoir 98 for storing the recovered moisture, wherein the reservoir 98 is provided with irrigation means 19, 21 for delivering moisture present in the reservoir 98 to a subsoil located therebelow.

According to an aspect of the invention, the collection structure 99 and/or the reservoir 98 are manufactured from a biodegradable material, such as biodegradable plastic or pulp. The biodegradable material may include cardboard, cellulose, such as paper tissue, paper foam and/or fiber paper.

As an example, the fiber paper may include coconut fiber, cotton fiber, banana fiber, jute fiber, wool fiber, straw fiber, grass fiber, hemp fiber, kenaf fiber, wheat straw paper, sunflower stalks fiber, rags fiber, mulberry paper and/or kozo.

A biodegradable plastic can be based on petroleum based plastics or renewable raw materials, both including a biodegradable additive.

Generally, petroleum based plastics are known as hydro-carbons.

During a biodegradation process, microbes are enabled to metabolize the
molecular structure of the plastic and to produce inert humus material, water and biogases, such as CH$_4$ and CO$_2$. An example of a biodegradable additive is the commercially available substance, known as EcoPure including organic compounds for opening the polymer chain of the hydrocarbons, and attractants stimulating microbial colonization on the plastics. The biodegradation occurs at the atomic level and is anaerobic or aerobic. As an example, a biodegradable additive can be applied for a wide variety of plastics, such as PVC, PE, PP, PS, PC, PET and PA.

Renewable raw materials for forming a biodegradable plastic may include wood fiber, e.g. 60%, combined with a plastic, e.g. 40%. When a suitable biodegradable additive is added, the material is made biodegradable.

Pulp as such can include various materials. Preferably, the pulp consists of biodegradable material. For example, the pulp that is used mainly consists (for example by at least 90%, e.g. at least 99%) of wood pulp, paper pulp, or a combination of paper pulp and wood pulp. The pulp can include other materials as well, for example one or more of the materials that have been mentioned above.

Alternatively, the pulp contains liquid (e.g. water) when it is applied to a mould, wherein the pulp can be dried (i.e. the liquid is removed from the pulp) during and/or after the moulding process.

Preferably, material forming the collection structure and the reservoir includes water impermeable material and/or is provided with a liquid impermeable coating, e.g. on the inner and/or outer side. Further, the forming material can be coated with a biodegradable layer, preferably having a pre-determined thickness so that a desired degree of degradedness can be set. Alternatively or additionally, the degradedness of the biodegradable layer can be set by including a dosed amount of conserving material. Further, the degradedness can be set by localizing specific parts at specific heights with respect to the ground level. In general, material in the
collection structure will degrade later than material in the reservoir, due to the position relative to the ground.

The base material of the collection structure and/or reservoir includes additives, specific materials, that are bound to the base material for a specific time period and is then disseminated into the environment, due to degradable properties of the base material. By setting the degradedness of the base material, the degree of dissemination of the additives can be determined. In this respect it is noted that environmental parameters, such as wind, moisture etc may influence the degradedness of the base material.

As an alternative, the additives are attached to the structure, e.g. in a pocket or in an adhesive layer at an outer surface of the structure, such that the additives can disseminate after placing the structure on the soil.

After placing the breeding structure and the young plant, the additives can immediately disseminate into the soil structure. Especially, the additives can then penetrate into the soil containing roots of the young plant, thus improving surviving conditions for the young plant.

Since the bottom of the reservoir covers the soil, additives can immediately spread in the soil directly below the reservoir. As an example, mycorrhizae or other fungi, more generally hydrophilic additives, can immediately disseminate and/or multiply under the influence of the extreme high humidity under the reservoir. The air below the reservoir can even be saturated with moisture, thus improving the circumstances for the roots to grow. In this respect it is noted that no sunlight enters below the reservoir.

Further, temperature conditions are relatively moderate since the soil directly under the reservoir will not become extremely hot or extremely cold. Due to the heat capacity of the reservoir, and the water in it, the temperature under the reservoir mainly follows the temperature course of the environmental air avoiding the extremes.
The additives can thus be integrated with the base material of the structure for facilitating growth of a young plant. Further, additives can be included in a coating layer that is provided on the structure, either on the outer side or the inner side, or both sides. The coating layer can be provided on the structure using a known coating process, such as spraying or immersing. The additives are then attached at the surface of the structure. The additives can also be provided by impregnating the structure with a carrier material including the additives. Then, the whole structure, or a substantial part of it, is penetrated by the additives.

At least one of the above-mentioned techniques, e.g. the immersing process, can be carried out at the spot where the plant breeding system is to be placed and the young plant is to be planted, thereby providing a system that is in principle suitable for application everywhere on Earth, while the last processing step, e.g. the immersing process, makes the system especially dedicated for use at the location of interest. In addition, by providing additives a relatively short time before actually placing the system, the additives can immediately start penetrating the subsoil and a ball of soil that carries at least a part of the root structure of the root structure, of the young plant. The additives are then not spoiled during transport and/or storage.

The additives may include aromatic substances, flavourings, such as camphor, chili, pepper or garlic, (artificial) fertilizer or mycorrhizae, antifungal material and/or an insecticide, e.g. nicotine or borax for chasing away harmful animals such as termites, and/or fungi. Similarly, the additives may include animal urine or excrements such as elephant excrements, baits such as sugar, honey and/or syrup, and/or dried plant parts, such as dried Melaleuca species, dried Taxodium species and/or dried Juniperus species. As an example, dried Taxodium distichum and/or dried Melaleuca species can be used for chasing away termites.
Further, the additives may include seeds, symbiotic bacteria, eggs, nutrients and/or spores that may germinate after leaving the base material, thereby improving the biodiversity of the irrigating system.

In addition, the additives may include material that damages harmful animals. Such material may include glass grindings, sand grindings, metal grindings, cement, lime, silicon, rubber or any material that damages harmful animals, preferably without poisoning.

The additives may influence soil characteristics. As an example, an acid degree can be increased or decreased. As a further example, a salt degree can be reduced.

The system may include a combination of different additives. As an example, a first part of the system, e.g. the collection structure or a cup (as described below), might include a first additive, while a second part of the system, e.g. a reservoir or an intermediate portion (as described below) may include a second additive. The number of additives such as seeds, fungi and/or spores can be determined before integrating in a base material.

Thus, the additive may serve as plant protecting material and/or plant nutrition material.

Advantageously, the plant tray may include biodegradable material. As an example, paper material and/or biodegradable plastic can be used.

By using paper material and/or biodegradable plastic, the plant irrigating system can be manufactured in a very cheap way. Further, the environmental impact decreases. Some cardboard, paper foam and/or fiber paper types easily tear, thereby counteracting any theft of the system. The paper material may include cardboard, cellulose, such as paper tissue, paper foam and/or fiber paper.

According to an aspect of the invention, a paper material carrier can be provided including specific material for dissemination into the environment caused by a biodegrading process of the paper material, e.g.
due to moisture. The specific material may include the specific materials described above in relation to the base material of the irrigating system.

The paper material carrier may be integrated with or fixed to the irrigating system or can be provided separately. Further, the paper material carrier may be applied without the irrigating system, e.g. for sowing seed in a field.

Further, additives can be included in a coating layer provided on the structure 1, simplifying the manufacturing, storing and distributing process. Advantageously, the structure is provided with a colour top layer, the specific colour indicating the type of additives that are provided on the structure. As an example, yellow systems are applicable for sand type soils, green systems are applicable for rocky type soils, pink systems are applicable for soils having a high pH degree, and gray systems are applicable for soils having a low pH degree. By colouring systems having additive composition dedicated to a particular soil and/or plant, the applicability of the system is even further recognizable.

It is noted that systems provided with a particular additive composition can be made distinguishable also in other ways, e.g. by providing marks on the outer surface.

In the shown embodiment, the water recovery surface 24 has a specific geometry for receiving rain, bloom and other moisture from the atmosphere. The water is collected in a drain 25 and flown to the reservoir 98 via downwardly extending pipes 26, 27. The moisture receiving structure 24 further includes a cap 28 removably closing an aperture in the cover layer 22, and an exit drain 29 flowing excess water to an exit opening 30 in a radial outer wall section 12a of the water reservoir 98. The wall module 2 extends through the cover layer 22 and the moisture receiving structure 24 and forms a radial inner wall of the drain 25.

Further, in the shown embodiment, the plant irrigating system includes an upwardly extending tube 2 forming a radial inner wall section
12b of the water reservoir 98. The tube 2 is connected to the collection structure 99 and has a longitudinal axis A2, for at least partly sideways surrounding a young plant. The water reservoir 98 is thus formed by the radial outer wall section 12a, the radial inner wall section 12b, a bottom side 11 and a cover layer 22 that forms a top section of the water reservoir 98.

During use of the removable plant protection system 1, a single or a multiple number of seeds, plants or small trees are placed in a soil area 9 surrounded by the tube 2, such that it on the one hand throws a shadow on the soil area 4 near the tube 2 when the sun reaches its highest orbit point and on the other hand allows a sun beam on the soil area 4 at a time period on the day when the elevation of the sun is relatively low, e.g. a few hours after sunrise and/or a few hours before sunset, as explained in more detail in the International patent application PCT/NL2010/050581.

Thereto, the system 1 is placed on the Earth’s surface and oriented such that the horizontal orientation of the tube aperture extends substantially parallel to an Earth’s circle of latitude, i.e. along an East-West line 5 extending from the East E to the West W. The East-West line 5 is perpendicular to a North-South line, not shown, also called a meridian line, extending from the North N to the South S.

The irrigation means for irrigation the subsoil may include an injection needle or to a capillary structure 21 extending through an irrigation point 19 for irrigation the subsoil in a dosed manner. Alternatively, a membrane is applied.

It is noted that numerous variations on the features, functions and/or geometry of the irrigating system 1 are possible. As an example, the collection surface of the water recovery surface 24 is substantially transverse with respect to the orientation of the gravity. The collection surface may have a specific shape including a grooved pattern as shown in Figure 1, or can be substantially flat. Further, channels can be formed to
guide the collected moisture droplets towards the reservoir. In addition, the collection structure can be provided with an overhanging portion extending away from the tube, beyond the outer side wall 12a of the reservoir 98.

It is also noted that the breeding system may include a collection structure for collecting moisture present in the atmosphere, without a water reservoir and without a tube at least partially surrounding a young plant. Then, the collected water is not collected in the breeding system, but directly available, e.g. for the plant in the soil. Alternatively, the breeding system may include a collection structure for collecting moisture present in the atmosphere and a reservoir for storing the water, without a tube at least partially surrounding a young plant.

Figure 2 shows a schematic perspective view of a second embodiment of a plant breeding system according to the invention, implemented as a plant tray 101. The plant tray 101 is applicable for propagating plants and/or seeds. The plant tray 101 has a multiple number of cups 103. The cups are mutually connected via intermediate portions 130, preferably via a detachable connection 135. During use of the plant tray, the cups 103 retain a plant growing medium and a seed and/or a plant at least partially embedded in the plant growing medium. On the upper side, the cup 103 has an opening 108 allowing an accommodated plant to grow in an upward direction UD. The cup 103 further has a bottom structure that is penetrable for a primary root of the plant growing in a downward direction DD. Further, the tray 101 includes a spacer extending downwardly, beyond the bottom structure of the cup 103.

The bottom structure as such can be configured and shaped in various ways, as will be appreciated by the skilled person. For example, the bottom structure can be flat, concave or convex, when viewed in a top view (i.e. in downward direction DD). Also, the bottom structure can be flat, concave or convex, when viewed from an opposite bottom view (i.e. in an upward direction UD).
The tray 101 is applicable for use in the field of horticulture / agriculture. Plants, such as vegetables, bushes, trees or flowers, can be grown in the cups 103. Thereto, the cups 103 are filled with a plant growing medium, e.g. ground, clay, substrate such as rock wool, perlite, flug sand, coarse granulates and/or peat soil. If biodegradable based materials are used for manufacturing the plant tray 101, in principle any kind of plant growing medium can be used. With the conventional trays the soil has to form a cup model and is not allowed to fall apart while planting in order not to cause breaking roots, because in the known planting method, the plant plug is taken out of the plastic cup before planting. By using a cup made from biodegradable material, any local soil, even soil that has no adhering structure, may be used. This means that the growth of plants becomes worldwide possible on the spot. In case of using non-biodegradable cups, after the plants have grown, the plant growing medium including the root structure, also called root plug, can be removed from the cup for planting in the ground. If biodegradable material is used for manufacturing the cup, the step of removing the plug from the cup can be omitted, thereby advantageously avoiding that damage may occur on the roots of the plant. If when using a bio-degradable cup a seed doesn’t germinate and a cup is without a plant, the cup including the soil medium can be mixed and reused together for the next planting. Small plants or seeds are embedded in the plant growing medium. During use, the tray 101 may be placed on a surface 113, e.g. on a desk, in a stand, or on a floor, for instance in a glass house. After the plants have grown, the plants can be put in another environment, e.g. in the ground.

In this context it is noted that the breeding system may include a single cup 103.

Figure 3 shows a flow chart of an embodiment of the method according to the invention. The method includes the steps of selecting (201) a young plant, retrieving (202) information from a soil structure wherein the
young plant is to be planted, and providing (203) a structure for facilitating
growth of a young plant, wherein the structure includes disseminatable
additives dedicated to the young plant and/or to the soil structure where the
young plant is to be planted.

The invention is not restricted to the embodiments described
herein. It will be understood that many variants are possible.

It is noted that if the breeding system is implemented as a plant
irrigating system, the system can have any closed periphery, in principle,
when seen in a top view, such as a U-profile, a polygon, a square, a
rectangle, a triangle, a circle, an ellipse, etc. Further, the irrigating system
can be formed without the above described tube. Then, the irrigating system
can be formed as a bag, bin, tank or pot.

The tube, if comprised by the irrigating system, can also have a
desired contour, such as a square, a circle, a rectangle, or a semi-closed or
half-opened contour, such as an U-shape.

The collection structure and/or the reservoir can be provided with a
heat isolating layer to prevent excessive increase of water in the reservoir.
As an example, the collection structure may include hollow spaces or heat
isolating material, e.g. perlite particles.

It is further noted that any structure for facilitating growth of a
young plant may include disseminatable additives dedicated to the young
plant and/or to the soil structure where the young plant is to be planted.

Other such variants will be apparent for the person skilled in the
art and are considered to fall within the scope of the invention as defined in
the following claims.
Conclusies

1. Werkwijze voor het kweken van jonge planten, omvattende de stappen van:
   - het selecteren van een jonge plant;
   - het winnen van informatie uit een grondstructuur waarin de jonge plant geplant dient te worden;
   - het verschaffen van een structuur voor het faciliteren van groei van een jonge plant, waarbij de structuur verspreidbare additieven bevat die bestemd voor de jonge plant en/of voor de grondstructuur waarin de jonge plant geplant dient te worden.

2. Werkwijze volgens conclusie 1, waarbij de structuur voor het faciliteren van groei van een jonge plant een plantirrigatiesysteem heeft en/of een planttray met een cup voor het vasthouden van de jonge plant.

3. Werkwijze volgens conclusie 1 of 2, waarbij een meervoudig aantal verspreidbare additiefsoorten in het basismateriaal van de structuur zijn opgenomen.

4. Werkwijze volgens één van de voorgaande conclusies, waarbij additieven grondkarakteristieken wijzigen, zoals de zuurgraad, een zoutgraad en/of een kalkgraad.


7. Werkwijze volgens één van de voorgaande conclusies, waarbij de verspreidbare additieven een voor schadelijke dieren schadelijk materiaal omvatten, zoals glasslijpsel, zandslijpsel, metaalslijpsel, cement, kalk, silicium en/of rubber.

8. Werkwijze volgens één van de voorgaande conclusies, omvattend de stap van de structuur van een deklaag voorzien die additieven heeft die zijn bestemd voor de jonge plant en/of voor de grondstructuur waarin de jonge plant geplant dient te worden.

9. Werkwijze volgens één van de voorgaande conclusies, omvattend de stap van de structuur van een kleur voorzien, waarbij een eerste structuur voorzien van een eerste additiefsamenstelling een eerste kleur heeft en waarbij een tweede structuur voorzien van een tweede additiefsamenstelling, die afwijkt van de eerste additiefsamenstelling, een tweede kleur heeft, die afwijkt van de eerste kleur.

10. Plantkweek systeem, omvattend een structuur voor het faciliteren van groei van een jonge plant, waarbij de structuur verspreidbare additieven omvat die zijn bestemd voor de jonge plant en/of voor de grondstructuur waarin de jonge plant geplant dient te worden.

11. Plantkweek systeem volgens conclusie 1, waarbij het basismateriaal waarvan de structuur is gemaakt biologisch afbreekbaar materiaal en/of pulp omvat.


13. Plantkweek systeem volgens één van de voorgaande conclusies, waarbij het systeem een plantirrigatiesysteem omvat en waarbij de structuur voor het faciliteren van groei van een jonge plant een
verzamelstructuur omvat voor het verzamelen van in de atmosfeer aanwezig vocht, waardoor de verzamelstructuur is voorzien van een waterterugwinoppervlak dat tijdens gebruik ten minste gedeeltelijk een hoek maakt ten opzichte van de oriëntatie van de zwaartekracht, waardoor de structuur voor het faciliteren van groei van een jonge plant verder een reservoir omvat voor het opslaan van het teruggewonnen vocht, waardoor het reservoir is voorzien van irrigatiemiddelen om in het reservoir aanwezig vocht aan een ondergrond te leveren.

14. Plantkweeksysteem volgens één van de voorgaande conclusies, waardoor het systeem een planttray omvat voor het telen van planten, en waarbij de structuur voor het faciliteren van groei van een jonge plant een cup omvat voor het vasthouden van een plantgroeimedium en een zaad, een stek en/of een plant die ten minste gedeeltelijk is ingebed in het plantgroeimedium.

15. Plantkweeksysteem volgens conclusie 14, waardoor de structuur voor het faciliteren van groei van een jonge plant een meervoudig aantal cups omvat en tussenliggende gedeelten die de individuele cups onderling verbinden.
**SAMENWERKINGSVERDRAG (PCT)**

**RAPPORT BETREFFENDE NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE**

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

Volgens de internationale classificatie (IPC)

A01G13/02;A01G29/00

**II. ONDERZOECHTE GEBIEDEN VAN DE TECHNIEK**

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**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)
A. CLASSIFICATIE VAN HET ONDERWERP

INV. A01G13/02 A01G29/00
ADD.

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

B. ONDERZOEKTE GEBIEDEN VAN DE TECHNIEK

Onderzocht minimum documentatie (classificatie gevolgd door classificationsymbolen)
A01G

Onderzocht andere documentatie dan de minimumdocumentatie, 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 uitvoerbaar, gebruikte trefwoorden)

EPO-Internal, WPI Data

C. VAN BELANG GEACHTTE DOCUMENTEN

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Diverse documenten worden vermeld in het vervolg van vak C.

X Leden van dezelfde octrooifamilie zijn vermeld in een bijlage

Datum waarop het onderzoek naar de stand van de techniek van internationaal type werd voortgezet

4 juni 2012

Datum van het rapport van het onderzoek naar de stand van de techniek van internationaal type

De bevoegde ambtenaar

Merckx, Alain

Formular PCT/ISA/201 ( Tweede blad ) (Januari 2004)
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WRITTEN OPINION

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
Merckx, Alain

Form NL237A (Dekblad) (July 2006)
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 9, 12
   No: Claims 1-8, 10, 11, 13-15

   Inventive step
   Yes: Claims
   No: Claims 1-15

   Industrial applicability
   Yes: Claims 1-15
   No: Claims

2. Citations and explanations

   see separate sheet
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Re Item V
Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1 Reference is made to the following documents:
   D2: US 2009/272033 A1 (PALEARI RONALD IRINEU [BR]), 5 November 2009
   D3: FR 2 862 184 A1 (AHLSTROM RESEARCH & SERVICES [FR]; AHLSTROEM OY [FI]), 20 May 2005
   D4: US 3 755 965 A (EMERY D), 4 September 1973
   D5: WO 2004/074214 A2 (CANTI & FIGLI SRL [IT]; CANTI MAX [IT] ECO NEW TECHNOLOGY LLC [US]; CA), 2 September 2004
   D6: US 4 333 265 A (ARNOLD RICHARD L), 8 June 1982
   D7: US 3 896 587 A (INSALACO CHARLES J), 29 July 1975
   D8: US 4 126 417 A (EDWARDS PAUL R), 21 November 1978

2 Lack of novelty: independent claims 1, 10
The present application does not meet the criteria of patentability, because the subject-matter of claims 1 and 10 is not new.

2.1 The document D1 discloses (inserted references apply to this document):

   A plant breeding system, comprising a structure (1) for facilitating growth of a young plant (3), wherein the structure includes disseminatable additives (nutrients and/or symbiotic bacteria) dedicated to the young plant and/or to the soil structure (4) where the young plant is to be planted.

2.2 Hence, as it appears that all the technical features of independent claim 10 are disclosed in D1, the subject-matter of this claim can not be considered as new.
2.3 The document D1 also implicitly discloses (inserted references apply to this document):

- A method of breeding young plants, comprising the steps of:
  - selecting a young plant (3);
  - retrieving information from a soil structure (4) wherein the young plant is to be planted; and
  - providing a structure (1) for facilitating growth of a young plant, wherein the structure includes disseminatable additives (nutrients and/or symbiotic bacteria) dedicated to the young plant and/or to the soil structure where the young plant is to be planted.

2.4 The first step is implicit and the second step is obvious because any plant grower would assess the state of the soil before planting, retrieving at least some general information, such as its apparent humidity and fertility. Therefore, all the technical features of independent claim 1 are disclosed in D1 and the subject-matter of this claim also lacks novelty.

2.5 The documents D2 to D6 are also relevant to the novelty of claims 1 and 10.

3 Lack of novelty or inventive step: dependent claims 2-9, 11-15

Dependent claims 2 to 9 and 11 to 15 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of novelty (claims 2-8, 11, 13-15) or inventive step (claims 9, 12), for the following reasons:

3.1 The features of claims 2 to 8, 11 and 13 to 15 are all disclosed in at least one of the documents D1 to D6 (see the search report and the cited passages);

3.2 The feature of claim 9 (color coding for distinguishing structures with different additives) is a slight constructional change in the method of claim 1, which comes within the scope of the customary practice followed by persons skilled in the art (see for example the documents D7 and D8); and

3.3 The feature of claim 12 (integrating the disseminatable additives in the base material) has already been employed for the same purpose in a similar structure (see document D2, but D5 and D6 as well). It would therefore be obvious to the person skilled in the art to apply this feature with corresponding effect to a collection structure and/or a reservoir according to D1 (or D4), thus arriving at a plant breeding system according to claim 12.
Re Item VII
Certain defects in the application

4 Lack of references to the drawings
   The features of the claims are not provided with reference signs placed in parentheses.

Re Item VIII
Certain observations on the application

5 Lack of clarity: claims 1, 2, 4-8, 10-14
   Claims 1, 2, 4 to 8 and 10 to 14 are not clear.

5.1 Claims 1, 2, 4 to 8, 10 to 12 and 14 contain the expression and/or. Such an expression shall be construed in its broadest sense (or), i.e. the presence, in the prior art, of only one of the features separated by such an expression shall be taken into account to assess the novelty.

5.2 Claims 4, 5 and 7 contain the expression such as. This expression has no limiting effect on the scope of a claim, i.e. the features following it shall be regarded as non-restrictive examples.

5.3 Claim 11 is directed to a plant breeding system but has been made dependent on claim 1, which is directed to a method. It is assumed that this is a typing error and claim 11 is construed as dependent on claim 10.

5.4 A similar reasoning applies to the device claims 12 to 14, which have been made dependent on any of the preceding claims, although claims 1 to 9 are directed to a method.

5.5 Furthermore, claim 12 refers to the collection structure and/or the reservoir, however those features are only defined in claim 13. Therefore, claim 12 is construed as dependent on claim 13.