Abstract: A seed and plant growth medium module includes a seed embedded in plant growth medium which is encapsulated in a biodegradable moisture retaining shell. The shell has a bottom with an upper covering. A root opening is provided in the bottom to allow egress of roots as the seed germinates. A plant egress opening is provided in the upper covering to allow upward growth of a plant resulting when the seed germinates. At least one water entry opening is provided in the shell to allow entry of moisture into the shell to wet the plant growth medium.
TITLE
[0001] Seed and plant growth medium module

FIELD
[0002] The present invention relates to a seed and plant growth medium module that is used in reforestation and land reclamation.

BACKGROUND
[0003] In reforestation and land reclamation some modest success has been attained by placing a seed into plant growth medium to form a seed and plant growth medium module. It has been determined that whether the seed in the module germinates is entirely dependent upon the moisture received during germination.

SUMMARY
[0004] There is provided a seed and plant growth medium module comprising a seed embedded in plant growth medium which is encapsulated in a biodegradable moisture retaining shell. The shell has a bottom with an upper covering. A root opening is provided in the bottom to allow egress of roots as the seed germinates. A plant egress opening is provided in the upper covering to allow upward growth of a plant resulting when the seed germinates. At least one water entry opening is provided in the upper covering of the shell to allow entry of moisture into the shell to wet the plant growth medium.

[0005] According to an aspect, there is provided a seed and plant a seed and plant growth medium module, comprising a seed embedded in plant growth medium which is encapsulated in a biodegradable polymer plastic moisture retaining shell. The shell has a bottom with an upper covering. A root opening is provided in the bottom to allow egress of roots as the seed germinates. A plant egress opening is provided in the upper covering to allow upward growth of a plant resulting when the seed germinates. The shell is in the form of a disk with a rain collection gutter positioned around a circumference of the disk and at least one water entry opening is provided to allow moisture collected in the rain collection gutter to pass into the shell to wet the plant growth medium.
[0006] According to an aspect, there is provided a method of preparing a seed for planting, comprising the steps of: embedding a seed within plant growth medium; wetting the plant growth medium; and freezing the plant growth medium to retain moisture during transport.

[0007] According to an aspect, there is provided a seed and plant growth medium module, comprising a seed embedded in plant growth medium which is encapsulated in a biodegradable moisture retaining shell. The shell has a bottom with an upper covering, a root opening being provided in the bottom to allow egress of roots as the seed germinates, and a plant egress opening being provided in the upper covering to allow upward growth of a plant resulting when the seed germinates. Frozen moisture is contained within the plant growth medium.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] These and other features will become more apparent from the following description in which reference is made to the appended drawings, the drawings are for the purpose of illustration only and are not intended to be in any way limiting, wherein:

FIG. 1 is a top plan view of a seed and plant growth medium module.

FIG. 2 is a bottom plan view of the seed and plant growth medium module.

FIG. 3 is a side elevation view of the seed and plant growth medium module.

FIG. 4 through 6 are variations of the seed and plant growth medium module.

DETAILED DESCRIPTION

[0009] A seed and plant growth medium module generally identified by reference numeral 10 will now be described with reference to FIG. 1 through 6.

Structure and Relationship of Parts:

[0010] Referring to FIG. 1, seed and plant growth medium module 10 includes a seed 12 embedded in plant growth medium 14 which is encapsulated in a biodegradable moisture retaining shell 16, such as a shell made from biodegradable polymer plastic, or plasticized paper. Shell 16 has a bottom 18 shown in FIG. 2 and an upper covering 20 shown in FIG. 3.
Plant growth medium 14 may be compressed, and preferably contains substances that are known in the art to enhance plant growth.

[0011] Referring to FIG. 2, a root opening 22 is provided in bottom 18 to allow egress of roots as seed 12 germinates. Referring to FIG. 3, a plant egress opening 24 is provided in upper covering 20 to allow upward growth of a plant resulting from the germination of seed 12. One or more water entry openings 26 are provided in shell 16 to allow entry of moisture into shell 16 to wet plant growth medium 14. As shown in FIG. 3, water entry opening 26 may be the same as plant egress opening. It will be understood that the number of water entry openings may be varied to be one or more, depending on the preference of the user. Alternatively, water entry openings 26 may be provided by using a porous or perforated material (not shown).

[0012] Referring to FIG. 4, upper covering 20 may have a concave depression 28 with water entry openings 26 positioned in concave depression 28. In this embodiment, water entry opening 26 is again the same as plant egress opening 24, although other openings 26 may also be provided. There may also be more than one concave depression 28 with corresponding water entry openings 26, depending on the preference of the user. Referring to FIG. 5 and 6, shell 16 may have a peripheral rain collection gutter 30 with water entry openings 26 extending from peripheral rain collection gutter 30 through a defining wall 32 of shell 16. In FIG. 5, peripheral rain collection gutter 30 is positioned around bottom 18 of shell 16, and in FIG. 6, peripheral rain collection gutter 30 is spaced upwardly from bottom 18 of shell 16.

[0013] The embodiments depicted are shown to be generally "disk" shaped, some of which have a rain collection gutter 30 positioned around a circumference of the disk. However, it will be understood that the actual shape may vary depending on the preferences of the user and depending on the circumstances of the intended use. Considerations that may be taken into account when designing the shape of shell 16 may include stability on the ground, volume to surface area ratio, material costs, water collection or drainage, distance from seed to top and bottom, etc.
Operation:

[0014] Referring to FIG. 1, seed and plant growth medium module 10 are provided by embedding seed 12 in plant growth medium 14, which may be compressed. Compressed plant growth medium 14 with seed 12 may then wetted and frozen to ensure there is sufficient water for the seed to germinate once the module 10 has been distributed. Optionally, modules 10 may be distributed in a dry condition. In general, modules 10 are wetted when there is a concern about whether there will be sufficient water to allow the seed to germinate. However, when there will be sufficient water in the environment, it may be unnecessary to wet the modules. Preferably, compressed plant growth medium with seed 12 is at least partially enclosed in a shell 16. Shell 16 may take various forms. Modules 10 are then placed where a tree is desired, such as in reforestation efforts, etc. with bottom 18 facing down. Moisture that may be gathered by depression 28 as shown in FIG. 4 or gutter 30 as shown in FIG. 5 or 6 is transferred inside shell 16 through water entry openings 26. As seed 12 germinates, roots egress out of shell 16 via root opening 22, and the resulting plant extends out of egress opening 24. Shell 16 is preferably sufficiently durable such that it remains intact long enough to retain moisture and increase the chance of survival of the resulting plant, while being biodegradable such that it breaks down after this has occurred to avoid any environmental damage. It has been found that modules that have been frozen retain their moisture during transportation and handling longer than modules that have not been frozen.

[0015] In this patent document, the word "comprising" is used in its non-limiting sense to mean that items following the word are included, but items not specifically mentioned are not excluded. A reference to an element by the indefinite article "a" does not exclude the possibility that more than one of the element is present, unless the context clearly requires that there be one and only one of the elements.

[0016] The following claims are to be understood to include what is specifically illustrated and described above, what is conceptually equivalent, and what can be obviously substituted. Those skilled in the art will appreciate that various adaptations and modifications of the described embodiments can be configured without departing from the scope of the claims. The illustrated embodiments have been set forth only as examples and should not be
taken as limiting the invention. It is to be understood that, within the scope of the following claims, the invention may be practiced other than as specifically illustrated and described.
What is Claimed is:

1. A seed and plant growth medium module, comprising:
   a seed embedded in plant growth medium which is encapsulated in a biodegradable
   moisture retaining shell, the shell having a bottom with an upper covering, a root opening
   being provided in the bottom to allow egress of roots as the seed germinates, a plant egress
   opening being provided in the upper covering to allow upward growth of a plant resulting
   when the seed germinates, at least one water entry opening being provided in the upper
   covering of the shell to allow entry of moisture into the shell to wet the plant growth
   medium.

2. The seed and plant growth medium module of Claim 1, the upper covering having at least
   one concave depression with the at least one water entry opening positioned in the at least
   one concave depression.

3. The seed and plant growth medium module of Claim 1, wherein the upper covering of the
   shell comprises a defining wall extending from the bottom of the shell, the shell having a
   peripheral rain collection gutter with the at least one water entry extending from the
   peripheral rain collection gutter through a defining wall of the shell.

4. The seed and plant growth medium module of Claim 3, wherein the peripheral rain
   collection gutter is positioned around the bottom of the shell and the at least one water entry
   is positioned in the defining wall adjacent to the bottom.

5. The seed and plant growth medium module of Claim 3, wherein the peripheral rain
   collection gutter is spaced upwardly from the bottom of the shell.

6. The seed and plant growth medium module of Claim 3, wherein the shell is in the form of
   a disk and the rain collection gutter is positioned around a circumference of the disk.

7. The seed and plant growth medium module of Claim 1, wherein the shell is made of
8. The seed and plant growth medium module of Claim 1, wherein the plant growth medium is compressed.

9. A seed and plant growth medium module, comprising:
   a seed embedded in plant growth medium which is encapsulated in a biodegradable polymer plastic moisture retaining shell, the shell having a bottom with an upper covering, a root opening being provided in the bottom to allow egress of roots as the seed germinates, a plant egress opening being provided in the upper covering to allow upward growth of a plant resulting when the seed germinates, the shell being in the form of a disk with a rain collection gutter positioned around a circumference of the disk and at least one water entry opening being provided to allow moisture collected in the rain collection gutter to pass into the shell to wet the plant growth medium.

10. The seed and plant growth medium module of Claim 9, the upper covering having at least one concave depression with the at least one water entry opening positioned in the at least one concave depression.

11. The seed and plant growth medium module of Claim 9, wherein the peripheral rain collection gutter is positioned around the bottom of the shell.

12. The seed and plant growth medium module of Claim 9, wherein the peripheral rain collection gutter is spaced upwardly from the bottom of the shell.

13. The seed and plant growth medium module of Claim 9, wherein the plant growth medium is compressed.

14. A method of preparing a seed for planting, comprising the steps of:
   embedding a seed within plant growth medium;
   wetting the plant growth medium; and
   freezing the plant growth medium to retain moisture during transport.
15. The method of claim 14, further comprising the step of enclosing the plant growth medium with a shell, the shell having a bottom with an upper covering, a root opening being provided in the bottom to allow egress of roots as the seed germinates, a plant egress opening being provided in the upper covering to allow upward growth of a plant resulting when the seed germinates, at least one water entry opening being provided in the shell to allow entry of moisture into the shell to wet the plant growth medium.

16. A seed and plant growth medium module, comprising:

a seed embedded in plant growth medium which is encapsulated in a biodegradable moisture retaining shell, the shell having a bottom with an upper covering, a root opening being provided in the bottom to allow egress of roots as the seed germinates, and a plant egress opening being provided in the upper covering to allow upward growth of a plant resulting when the seed germinates; and frozen moisture contained within the plant growth medium.

17. The seed and plant growth medium module of claim 16, further comprising at least one water entry opening provided in the shell to allow entry of moisture into the shell to wet the plant growth medium.

18. The seed and plant growth medium module of Claim 17, the upper covering having at least one concave depression with the at least one water entry opening positioned in the at least one concave depression.

19. The seed and plant growth medium module of Claim 17, wherein the shell has a peripheral rain collection gutter with the at least one water entry extending from the peripheral rain collection gutter through a defining wall of the shell.

20. The seed and plant growth medium module of Claim 19, wherein the peripheral rain collection gutter is positioned around the bottom of the shell and the at least one water entry is positioned in the defining wall adjacent to the bottom.
21. The seed and plant growth medium module of Claim 19, wherein the peripheral rain collection gutter is spaced upwardly from the bottom of the shell.

22. The seed and plant growth medium module of Claim 19, wherein the shell is in the form of a disk and the rain collection gutter is positioned around a circumference of the disk.

23. The seed and plant growth medium module of Claim 17, wherein the shell is made of polymer plastic.

24. The seed and plant growth medium module of Claim 17, wherein the plant growth medium is compressed.
What is Claimed is:

1. A seed and plant growth medium module, comprising:
   a seed embedded in plant growth medium which is encapsulated in a biodegradable moisture retaining shell, the shell having a bottom with an upper covering, a root opening being provided in the bottom to allow egress of roots as the seed germinates, a plant egress opening being provided in the upper covering to allow upward growth of a plant resulting when the seed germinates, at least one water entry opening being provided in the upper covering of the shell to allow entry of moisture into the shell to wet the plant growth medium; and
   the upper covering having at least one concave depression with the at least one water entry opening positioned in the at least one concave depression.

2. The seed and plant growth medium module of Claim 1, wherein the upper covering of the shell comprises a defining wall extending from the bottom of the shell, the shell having a peripheral rain collection gutter with the at least one water entry extending from the peripheral rain collection gutter through a defining wall of the shell.

3. The seed and plant growth medium module of Claim 2, wherein the peripheral rain collection gutter is positioned around the bottom of the shell and the at least one water entry is positioned in the defining wall adjacent to the bottom,

4. The seed and plant growth medium module of Claim 2, wherein the peripheral rain collection gutter is spaced upwardly from the bottom of the shell.

5. The seed and plant growth medium module of Claim 2, wherein the shell is in the form of a disk and the rain collection gutter is positioned around a circumference of the disk.

6. The seed and plant growth medium module of Claim 1, wherein the shell is made of polymer plastic.

7. The seed and plant growth medium module of Claim 1, wherein the plant growth medium is
compressed.

8. A seed and plant growth medium module, comprising:
   a seed embedded in plant growth medium which is encapsulated in a biodegradable polymer plastic moisture retaining shell, the shell having a bottom with an upper covering, a root opening being provided in the bottom to allow egress of roots as the seed germinates, a plant egress opening being provided in the upper covering to allow upward growth of a plant resulting when the seed germinates, the shell being in the form of a disk with a rain collection gutter positioned around a circumference of the disk and at least one water entry opening being provided to allow moisture collected in the rain collection gutter to pass into the shell to wet the plant growth medium; and
   the upper covering having at least one concave depression with the at least one water entry opening positioned in the at least one concave depression.

9. The seed and plant growth medium module of Claim 8, wherein the peripheral rain collection gutter is positioned around the bottom of the shell

10. The seed and plant growth medium module of Claim 8, wherein the peripheral rain collection gutter is spaced upwardly from the bottom of the shell.

11. The seed and plant growth medium module of Claim 8, wherein the plant growth medium is compressed.

12. A method of preparing a seed for planting, comprising the steps of:
   embedding a seed within plant growth medium;
   wetting the plant growth medium; and
   freezing the plant growth medium to retain moisture during transport.

13. The method of claim 12, further comprising the step of enclosing the plant growth medium with a shell, the shell having a bottom with an upper covering, a root opening being provided in the bottom to allow egress of roots as the seed germinates, a plant egress opening being provided in the upper covering to allow upward growth of a plant resulting when the seed germinates, at least one
water entry opening being provided in the shell to allow entry of moisture into the shell to wet the 
plant growth medium.

14. A seed and plant growth medium module, comprising:
   a seed embedded in plant growth medium which is encapsulated in a biodegradable 
moisture retaining shell, the shell having a bottom with an upper covering, a root opening being 
provided in the bottom to allow egress of roots as the seed germinates, and a plant egress opening 
being provided in the upper covering to allow upward growth of a plant resulting when the seed 
germinates; and 
   frozen moisture contained within the plant growth medium.

15. The seed and plant growth medium module of claim 14, further comprising at least one water 
entry opening provided in the shell to allow entry of moisture into the shell to wet the plant growth medium.

16. The seed and plant growth medium module of Claim 15, the upper covering having at least one 
concave depression with the at least one water entry opening positioned in the at least one concave 
depression.

17. The seed and plant growth medium module of Claim 15, wherein the shell has a peripheral rain 
collection gutter with the at least one water entry extending from the peripheral rain collection gutter 
through a defining wall of the shell.

18. The seed and plant growth medium module of Claim 17, wherein the peripheral rain collection 
gutter is positioned around the bottom of the shell and the at least one water entry is positioned in 
the defining wall adjacent to the bottom.

19. The seed and plant growth medium module of Claim 17, wherein the peripheral rain collection 
gutter is spaced upwardly from the bottom of the shell.

20. The seed and plant growth medium module of Claim 17, wherein the shell is in the form of a
disk and the rain collection gutter is positioned around a circumference of the disk.

21. The seed and plant growth medium module of Claim 15, wherein the shell is made of polymer plastic.

22. The seed and plant growth medium module of Claim 15, wherein the plant growth medium is compressed.
STATEMENT UNDER ARTICLE 19

The Applicant has amended the independent claims to focus upon the concave shape of the upper cover. The concave shape is not a mere design choice and allows for the collection of moisture from on top of the module and allows the module to hold more moisture for a longer period of time whereas a flat top losses moisture more readily. The increased moisture retention allows for a greater growing window, allowing growth to start earlier in the spring and last later into winter. The reason the season is extended with this invention is that we can allow the seed to be buried in snow all winter or plant in the spring when there still may be spring snowfall. Our concave top will capture moisture from the snow to hydrate the seeds. It is respectfully submitted that the Claims, as amended, now are distinguishable from the prior art. What is claimed both has novelty and embodies an inventive step.
INTERNATIONAL SEARCH REPORT

International application No
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A CLASSIFICATION OF SUBJECT MATTER

IPC A01G 9/10 (2006 01) , A01C 1/02 (2006 01) , A01G 23/00 (2006 01) , A01G 25/00 (2006 01)

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)

IPC A01G 9/10 (2006 01) , A01C 1/02 (2006 01) , A01G 23/00 (2006 01) , A01G 25/00 (2006 01)

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

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

Epoque epodoc, Full-text search US, CA, GB and FR

Keywords seed, pot, disk, module, wafer, frozen, gutter, moister and ram

C DOCUMENTS CONSIDERED TO BE RELEVANT

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[X] Further documents are listed in the continuation of Box C

[X ] See patent family annex

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

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