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(54) Benævnelse: **Organiske fibersåbeholdere og potter til kimplanter og planter og fremstillingsmetode derfor**

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EP-A- 1 685 760
GB-A- 831 622
US-A- 3 174 940
US-A- 4 047 329

DESCRIPTION

BACKGROUND OF THE INVENTION

[0001] The present invention relates to organic organic-fiber sowing vessels and pots for seedlings and plants, and also relates to a method for making said vessels and pots.

[0002] More specifically, the present invention relates to seedling and plant sowing vessels and pots, made of a biodegradable and not phytotoxic material, to which other components to be used as a substrate vessel for gamically and agamically propagating plants can be added.

[0003] As is known, a gamically propagating plant is a plant which is propagated sexually or through plant seeds, whereas an agamically propagating plant is a plant which is propagated through different vegetative members, such as stolons, sets, rhizomes, bulbs and so on.

[0004] Several agricultural cultivations are sown, or transplanted, or directly planted in a field, whereas other cultivations are sown or transplanted or planted at first in a protected environment, where they remain for a first portion of their growing cycle, up to a bedder or seedling stage, to be then bedded in a field or a greenhouse, where the plant will complete his growing cycle.

[0005] Modern breeding or farming methods provide to sow seeds or planting plant vegetative parts in a suitable germination substrate, for seeds, or a rooting substrate, for vegetative parts.

[0006] Such a substrate is arranged in suitable vessels, the so-called "sowing vessels" or "sowing trays", including a plurality of lucula or wells, having different sizes and shapes, where the substrate is arranged.

[0007] Thus, as the bedding operation is carried out, each seedling will have a small substrate "bread", for growing therein the most part of the tiny radical apparatus.

[0008] Consequently, the latter will not be subject to traumatic stresses, upon transplanting, and will be able of quickly recovering its growth, upon transferring the seedling or plant to its ultimate growing plates, that is either a growing field or a greenhouse.

[0009] Prior sowing trays are conventionally made of plastics material, such as polyethylene, or composite materials, such as paper materials, or of a plasticized or waxed or multilayered type, and/or made of a textile fiber and plastic material compounds.

[0010] In particular, foamed polystyrene sowing trays, which represent a broadly diffused type of sowing vessel, have the advantage of a comparatively high lightness and suitability for breeding systems either on a "floor support" or on a "bench support", that is said sowing trays are directly arranged on the germinating greenhouse floor, or in raised vats, similar to the well known working "benches" and being herein sprinkled with water from the top, or by a so-called "float system" sprinkling arrangement.

[0011] The words "float system" means herein, and as it is well known, a system for growing seedlings, where the polystyrene sowing trays are caused to float in a water or nourishing solution filled vat.

[0012] Thus, the seedlings, upon sprouting, will tend to drive their radicles from the substrate held in the mentioned luculum or well to the liquid medium, therefrom they will take water and other nourishing elements.

[0013] Notwithstanding the above mentioned advantages, prior plastics material sowing trays and vessels, and, in particular, polystyrene sowing trays, are affected by a lot of drawbacks.

[0014] In fact, for phytosanitary reasons, because they are susceptible to convey fungin and bacterial disease inocula, they must be renewed at the end of each growing cycle; to achieve this used sowing trays will be sent to thermaldestruction systems or to dumps, since they, in their used status, represent a special type of waste contaminated by residues of plant protection products.

[0015] Actually, attempts to sanitize used sowing trays by using disinfectant vapors or solutions, involve a lot of operating difficulties since such a sanitizing operation would be negatively affected by the volumes and shapes of the sowing trays; moreover, this situation is further aggravated by further problems deriving from processing operations performed on said sowing

trays, such as bendings, breakages, an increase of the brittleness of their material, and so on.

[0016] Thus, in addition to the problems and expenses related to a disposal of prior used sowing trays or vessels and pots, a further problem is that deriving from their use for providing industrial cultivation plants, as transplanted in outside fields, such as tomatoes, melons, tobaccos and so on.

[0017] Thus, for such a cultivation, the sowing trays, upon transplanting the plants held thereby, are conventionally left at the edge part of the field, and this would require to perform a subsequent expensive collecting operation, and convey used trays to corporate places to be disposed of.

[0018] In this connection it should be pointed out that the number of sowing trays conventionally used for a surface of an hectare, varies from 150 and 250, depending on the vegetable species being processed, each tray with an average size from 0.008 and 0.012 m^3 and a density of 19 + 30 kg/m^3.

[0019] Documents EP 1 685 760 A1, US 3 174 940 A, GB 831 622 A and US 4 047 329 all disclose a sowing vessel and pot for seedling and plants, the sowing vessel and pot being made of a fully biodegradable material and a method for making such a sowing vessel/pot for seedlings and plants, comprising the steps of using an organic fiber and methylen-urea or methylol-urea, all the prior methods mixing the different components in a first step and molding the mixture under heat and pressure in a second step.

SUMMARY OF THE INVENTION

[0020] Accordingly, the aim of the present invention is to provide a method for making sowing vessels or trays or pots, for seedlings and plants adapted to overcome the above mentioned problems affecting the prior art and related to the requirement of disposing of, by thermo-destructive or other disposal of methods, conventional trays, while eliminating other problems and expenses related to their handling at the end of their technical-agricultural period of life, that is in a post-servicing stage.

[0021] Within the scope of the above mentioned aim, a main object of the invention is to provide a method for making a sowing vessel or tray, or pot, for seedlings and plants, which is of a biodegradable nature and can be made with individual lucula of any desired configuration and size.

[0022] Another object is to provide such method for making a seedling and plant sowing tray and vessel-pot, overcoming any problems related to post-service handling such as collecting and conveying problems, to collect and convey used trays to a disposal of place or to thermally destruct or reuse them after a sanitizing operation, as possible.

[0023] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a method for making biodegradable sowing vessels or trays and pots, according to claim 1.

[0024] As is known, methylen-urea is a condensation product of urea and formic aldehyde, if its making reaction is carried out in an acid medium, while methylol-urea is a condensation product of urea and formic aldehyde if its making reaction is carried out in an alkaline medium.

[0025] Condensation methods for both reactions are well known from several years.

[0026] Each luculum or well represents for each seedling and plant, an organic substance source, whereas methylen-urea and/or methylol-urea represent a slow releasing nitrogen source.

[0027] The thus made sowing vessel or tray can further comprise both mineral and organic components.

[0028] As mineral components, it is possible to use: mineral fertilizer, in particular methylen-urea in powder form, zeolites, rock wool, pozzolan, pumice, clay minerals, vermiculite, perlite, foamed clay, bentonite and their mixtures in any desired rate.

[0029] As organic components, it is possible to use: vegetal meals, starches, natural and artificial textile fibers, sawdust, wood fibers and powders, as well as panel industry by products, papermill by products, paper processing waste, coconut fibers, jute fibers, kenaf fibers, barks, cork, cereal straw, rice and other cereal husks, sunflower seed shells, bagasse, peat, wood waste and

mixtures thereof, in all desired rates.

[0030] One of the preferred embodiments, comprises a parallelepipedal sowing vessel or tray, having a size of 600 mm (length) x up to 400 mm (width) x up to 160 mm (height) with a luculum or well number from 1 to 680 (34 x 20).

[0031] The luculum or well number depends on agronomic requirements of the vegetal species to be cultivated in the trays and vessels according to the invention.

[0032] For that same reason, the lucula or wells can have either an opened or closed front, including a plurality of different size holes, depending on agronomic requirements of the vegetal species being cultivated and the breeding procedure thereof.

[0033] A second embodiment comprises a sowing vessel in the form of a sowing tray with raised or elevated peripheral rims, without separating elements which, in previous embodiment, separated the inside space of the lucula or wells. In this embodiment, the tray size varies up to 600 mm (length) x up to 400 mm (width) x up to 160 mm (outer height) and up to 145 mm (inner height as measured within the tray). Even in this embodiment it is possible to either provide or not holes through the bottom of the tray.

[0034] Finally, a third embodiment comprises a flat tray, without peripheral raised or elevated rims, thereon is merely arranged or supported the cultivation sublayer, having preferably a size up to 600 mm (length) x up to 400 mm (width) x up to 160 mm (height).

[0035] In this embodiment too it is possible to either provide or not holes through the bottom portion of the tray.

[0036] The sowing vessels and pots according to the present invention provide a plurality of advantages with respect to prior art.

[0037] At first, a use of a fully biodegradable material sowing vessel or pot, prevents problems related to their post-use managing, such as: collecting, handling and sending to dumps, or related to their thermal destruction or reuse after sanitizing, as possible.

[0038] The organic fiber sowing vessels according to the invention, in addition to being biodegradable, provide, in their post-use period, a very important function, since they are partially constituted by a fertilizer which slowly releases nitrogen, with a great advantage from the cultivation standpoint, whereas the organic part (fiber) provides an organic amendment and fertilizer function.

[0039] Optionally included co-formulating mineral or organic arrays will integrate the methylen-urea activity, due to their complementary fertilizing and/or amendment action.

[0040] In particular, the sowing vessels and pots according to the present invention, allow to greatly simply and fully automatize the transplantation operations, since they must not be maintained in an undamaged condition, but can also be broken into pieces, directly on the cultivation field, and distributed through the soil, as a conventional nitrogenous fertilizer.

[0041] For further illustrating the present invention, non limitative examples are hereinbelow disclosed, which should not be considered as exhaustive of the inventive scope.

[0042] All the disclosed examples, in particular, are referred to 1000 g dry fiber, independently from the number of sowing vessels which can be made by using such an amount of fibers.

Example 1

[0043] 1000 g of recycled cellulose, as preliminarily washed, are water pulped in a pulper device to provide a 3 % dry material pulp, for a total of 33333.3 g pulp.

[0044] This dispersion is spread on a perforated belt, thereon sowing vessels or pots having desired configurations are made.

[0045] On the moving belt, the 3 % pulp material loses water to provide an intermediate product including about 30 % residual water (corresponding to about 70 % cellulose) for a total of 1428.6 g.

[0046] Then, with the belt being continuously driven, methylen-urea is added by using a nozzle or slot film coater.

[0047] The methylen-urea herein used has a molar ratio U:F = 1:0.5 and a dry residue of 60 % and being catalyzed, just before use, with 20 % phosphoric acid. The used ratios are as follows: 100 g liquid methylen-urea and 2 g solution phosphoric acid.

[0048] 500 g of the above catalyzed mixture are sprayed on 1428.6 g of the process intermediate product, at 70 % cellulose.

[0049] Immediately after the resin binding operation, the belt is caused to pass through a 150°C oven, where catalyzed methylen-urea is dried, and cellulose further loosing water to provide an end product including 5 % total residue moisture, for a total weight of 1364.3 g.

[0050] The thus made articles or manufacture are light, resistant to impacts, perfectly rigid and contain 8.7 % total nitrogen, of which 7.8 % is a slowly released nitrogen, whereas the remaining 0.9 % is constituted by ureic nitrogen.

Example 2

[0051] 1000 g virgin cellulose are water pulped in a pulper device to provide a 3 % dry material pulp, for a total of 33333.3 g pulp.

[0052] This dispersion is spread on a perforated belt, thereon sowing vessels and pots are formed in any desired configurations and size.

[0053] On the moving belt, 3 % dry material pulp loses water to provide an intermediate product including about 30 % residue water (corresponding to about 70 % cellulose), for a total of 1428.6 g.

[0054] Then, with the belt being continuously driven, methylol-urea is added by using a nozzle or slot film coater apparatus.

[0055] The herein used methylol-urea has a molar ratio U:F = 1:0.7 and a dry residue of 70 % and is catalyzed just before its use, by using a 15% ammonium phosphate (MAP) solution. The ratios are as follows: 100 g liquid methylen-urea and 10 g solution phosphate ammonium.

[0056] 700 g of the above catalyzed mixture are sprayed on 1428.6 g of the process intermediated product at 70 % cellulose.

[0057] Immediately after the resin binding operation, the belt is caused to pass through a 170°C oven, where said catalyzed methylol-urea is dried and cellulose further loses water to provide an end product including 7 % total residue moisture, for a total weight of 1540.5 g.

[0058] The thus made articles of manufacture are light, resistant to impacts, perfectly rigid and contain 10.0 % total nitrogen, of which 8.5 % is constituted by a slowly released nitrogen, whereas the remaining 1.5 % is constituted by ureic nitrogen.

Example 3

[0059] 1000 g recycled cellulose, as suitably washed, are water pulped in a pulper device to provide a 3 % dry material pulp, for a total of 33333.3 g pulp.

[0060] This dispersion is spread on a perforated belt, thereon the sowing vessels and pots to be made are formed to any desired configurations and size.

[0061] On said movable belt, the 3 % dry material pulp loses water to provide an intermediate product including about 30 % residue water (corresponding to about 70 % cellulose), for a total of 1428.6 g.

[0062] Then, with the belt being continuously driven, said methylen-urea is added by using a nozzle or slot film coater apparatus.

[0063] The herein used methylen-urea has a molar U:F = 1:1.0 ratio and 65% dry material contents and being catalyzed, just before use, by 35 % ammonium phosphate. The ratios are as follows: 100 g liquid ureic resin and 8 g solution ammonium sulphate.

[0064] 300 g of the above catalyzed mixture are sprayed on 1428.6 g of the processing intermediate product at 70 % cellulose.

[0065] Immediately after the resin binding operation, the belt is caused to pass through a 160°C oven, where said catalyzed methylen-urea is dried and cellulose further loses water to provide an end product including 2 % total residue moisture, for a total weight of 1212.6 g.

[0066] The thus made articles of manufacture are light, resistant to impacts, perfectly rigid and contain 5.5 % total nitrogen fully constituted by slowly released nitrogen.

Example 4

[0067] According to the method disclosed in Example 1, wood waste (N = 12 %) is herein used instead of cellulose for making a sowing vessel or pot which, in this embodiment, has a total nitrogen contents of 17.5 %, of which 8.8 % is constituted by organic nitrogen, 7.8 % by a slowly released nitrogen, and the remaining 0.9 % by ureic nitrogen.

Example 5

[0068] According to the method disclosed in Example 3, is herein used a (N = 12 %) bark fiber for making a sowing vessel or pot having characteristics corresponding to those achieved starting from a cellulose fiber material.

Example 6

[0069] 1000 g jute cloth or fabric are water pulped in a pulper apparatus.

[0070] The above dispersion is spread on a perforated belt, thereon the sowing vessels and pots to be made are formed to any desired configurations and size.

[0071] On the moving belt, said pulp loses water to provide an intermediate product including about 40 % residue water (corresponding to about 60 % jute cloth material), for a total of 1666.6 g.

[0072] Then, with the belt being continuously driven, methylen-urea is added by using a nozzle or slot film coater apparatus.

[0073] The herein used methylen-urea has a molar U:F = 1:0.6 and a dry residue of 70 %, and is mixed, just before use, with 35 % phosphoric acid. The operating ratios or rates are as follows: 100 g liquid methylen-urea and 3 g solution phosphoric acid.

[0074] 200 g of the above catalyzed mixture are sprayed on the 1666.6 g processing intermediate product at 60 % jute cloth material.

[0075] Immediately after the resin binding operation, the belt is caused to pass through a 150°C oven, where said catalyzed resin is dried, and jute further lose water to provide an end product including 2 % total residue moisture, for a total weight of 1161.2 g.

[0076] The thus made end articles of manufacture are light, resistant to impacts, perfectly rigid and contain 4.0 % total nitrogen, of which 3.6 % is constituted by a slowly released nitrogen and the remaining 0.4 % by ureic nitrogen

Example 7

[0077] 1,000 g recycled cellulose, as properly washed, are water pulped in a pulper apparatus to provide a 1 % dry material pulp, for a total of 100,000 g dispersion.

[0078] To this dispersion is added, directly from the dispersion, said methylen-urea.

[0079] With a continuously operated processing system, the methylen-urea is also continuously added.

[0080] The herein used methylen-urea has a molar ratio U:F=1:0.6 and a dry residue of 65% and being catalyzed, just before use, by 35% sulphate ammonium.

[0081] The operating ratios are 100 g liquid methylen-urea and 2 g solution ammonium sulphate.

[0082] For 1,000 g dry fiber, 1,333.3 g liquid methylen-urea are added.

[0083] Immediately after this addition, a mold is used for forming the subject article of manufacture, comprising the sowing vessel or any other desired sowing pot or vat.

[0084] The belt with the removed from the mold article of manufacture arranged thereon, is caused to pass through a 160°C oven, where said catalyzed methylen-urea is dried and cellulose further loses water to provide an end product including 5 % total residue moisture, for a total weight of 1,300 g.

[0085] In this connection, it should be apparent that the end weight will depend on the fact that only a portion of the added methylen-urea will remain on the fiber material, the remaining portion going to solution.

[0086] The thus made end articles of manufacture are light, resistant to impacts, perfectly rigid and contain 6 % total nitrogen, of which 5.8% constituted by slowly released nitrogen, whereas the remaining 0.2% is constituted by ureic nitrogen.

[0087] 60% total nitrogen, corresponding to 3.6%, is soluble in hot water, according to the fertilizer material activity index method.

Example 8

[0088] 1,000 g recycled cellulose, as properly washed, are water pulped in a pulper apparatus to provide a 1 % dry material pulp, for a total of 100,000 g of paste.

[0089] To this dispersion methylol-urea is directly added in said paste.

[0090] With the paste being continuously added, even said methylol-urea is continuously added.

[0091] The herein used methylol-urea has a molar ratio U:F=1:0.7 and a dry residue of 85% and is catalyzed just before use, by using 35% ammonium sulphate. The operating ratios correspond to 100 g liquid methylol-urea and 1 g solution ammonium sulphate.

[0092] For 1,000 g dry fiber, 1,500 g liquid methylol-urea are added.

[0093] Immediately after, by using a suitable mold, the herein desired articles of manufacture, comprising a sowing vessel or any other sowing pan or vat, are made.

[0094] The article of manufacture supporting belt, which supports the from the mold removed articles, is caused to pass through a 130°C oven, where the catalyzed methylol-urea is dried and cellulose further loses water to provide an end product including 6% total residue moisture, for a total weight of 1,250 g.

[0095] In this connection, it should be apparent that the end weight will depend on the fact that only a part of the added methylol-urea will remain on the fiber material, the remaining part going to solution.

[0096] The thus made end articles of manufacture are light, resistant to impacts, perfectly rigid and contain 5% total nitrogen, of which 4.9% is a slowly released nitrogen, whereas the remaining 0.1% is ureic nitrogen.

[0097] 80% total nitrogen, i.e. 4.0% thereof, is soluble in hot water, according to the fertilizer activity index method.

[0098] It has been found that the invention fully achieves the intended aim and objects.

[0099] In fact, the invention provides sowing vessels and pots or vats, for growing seedlings or plants in general, which vessels are fully made of a biodegradable material, thereby eliminating all problems related to their post-use managing such as: collecting, handling and sending to a disposal-of place, or for sending them to thermally destruction systems or for being optionally reused as possible.

[0100] The thus made sowing vessels and pots provide the possibility of simply making, in a fully mechanized manner, all the required transplantation operations, since said vessels must not be necessary maintained in an undamaged condition, but can also be broken into pieces directly on the field and spread on the soil, as a convention fertilizer.

[0101] In practicing the invention, the used materials, together with the contingent size and shapes, can be any, depending on requirements and the status of the art.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP1685760A1 **[0019]**
- US3174940A **[0019]**
- GB831622A **[0019]**
- US4047329A **[0019]**

Krav

1. Fremgangsmåde til at fremstille en såbeholder til kimplanter og planter, **kendetegnet** ved at nævnte fremgangsmåde omfatter mindst trinnene til at tilvejebringe en organisk fiber og opslæmme nævnte organiske fiber i vand for at tilvejebringe en vanddispersionspulp med et fastlagt tørstofindhold, at sprede nævnte vanddispersionspulp på et bevægeligt, perforeret bælte for at få nævnte vanddispersionspulp til at frigive en første fastlagt vandmængde, kontinuerligt at drive nævnte perforerede bælte samtidig med at et methylenurea- og/eller methylolurea-kondensationsprodukt coates eller deponeres på nævnte vanddispersionspulp på nævnte, kontinuerligt drevne, perforerede bælte, hvilket forårsager at nævnte perforerede bælte umiddelbart efter nævnte coating passerer gennem en opvarmningsovn med en fastlagt opvarmningstemperatur, hvilket forårsager at nævnte vanddispersionspulp yderligere frigiver en anden fastlagt vandmængde, og derved tilvejebringer et stort antal lette, modstandsdygtige mod stød, rigide såbeholdere indeholdende en fastlagt mængde af total nitrogen, enten helt i form af et langsomt afgiveligt nitrogen eller i form af et kombineret langsomt afgiveligt nitrogen og ureanitrogen.

2. Fremgangsmåde ifølge krav 1, **kendetegnet** ved at nævnte organiske fiber er genanvendt cellulose, nævnte genanvendte cellulose vaskes indledningsvis, og opslæmmes i vand i en pulperindretning for at tilvejebringe en pulpdispersion med 3% tørmateriale, nævnte pulpdispersion spredes på et bevægeligt perforeret bælte, hvorpå såbeholdere med en ønsket konfiguration skal fremstilles, på nævnte bevægelige perforerede bælte afgiver nævnte pulpdispersion vand for at tilvejebringe et mellemprodukt inkluderende omkring 30% restvand, kontinuerligt drivende nævnte bevægelige perforerede bælte og samtidig tilføje methylenurea dertil ved anvendelse af en filmcoater med dyse eller spalte, nævnte methylenurea har et U:F = 1:0,5 molærforhold og et tørrestindhold på 60% og katalyseres, lige før anvendelse, med 20% phosphorsyre, i forholdet 100 g flydende methylenurea og 2 g phosphorsyreopløsning, for at tilvejebringe en katalyseret blanding, en del af nævnte katalyserede blanding sprøjtes på nævnte mellemprodukt, straks efter nævnte coating- eller deponeringshandling bringes nævnte bevægelige perforerede bælte til at passere gennem en 150°C ovn for at tørre det katalyserede methylenurea, hvorved nævnte

cellulosevanddispersion yderligere afgiver vand for at tilvejebringe et slutprodukt inkluderende 5% total restfugtighed, derved tilvejebringende et stor antal lette, modstandsdygtige mod stød, rigide beholdere indeholdende 8,7% total nitrogen, hvoraf 7,8% er et langsomt afgiveligt nitrogen, mens de resterende 0,9% udgøres af ureanitrogen.

3. Fremgangsmåde ifølge krav 1 og 2, **kendetegnet** ved at nævnte organiske fiber omfatter frisk cellulose, nævnte friske cellulosefiber opslæmmes i vand i en pulperindretning for at tilvejebringe en pulpvanddispersion med 3% tørmateriale, nævnte dispersion spredes på et bevægeligt perforeret bælte, hvorpå nævnte såbeholdere vil skal formes til enhver ønsket konfiguration og størrelse, på nævnte bevægelige perforerede bælte afgiver nævnte vanddispersionspulp sådan en vandmængde at der tilvejebringes et mellemprodukt inkluderende omkring 30% restvand, nævnte bælte drives yderligere kontinuerligt samtidig med tilføjelse dertil af methylolurea ved anvendelse af et filmcoaterapparat med en dyse eller en spalte, nævnte methylolurea har et molærforhold på U:F = 1:0,7 og et tørrestindhold på 70% og katalyseres, lige før dets anvendelse, med en 15% ammoniumphosphat (MAP) opløsning, i et forhold på 100 g flydende methylolurea og 10 g ammoniumphosphatopløsning, for at tilvejebringe en katalyseret blanding, en mængde af nævnte katalyserede blanding sprøjtes på nævnte mellemprodukt, straks efter coatingen bringes nævnte bevægelige perforerede bælte til at passere gennem en 170°C ovn, hvor nævnte katalyserede methylolurea tørres og derved forårsager at nævnte cellulosefiberpulp til yderligere at afgive vand for at tilvejebringe et slutprodukt inkluderende 7% total restfugtighedsmængde, derved tilvejebringende et stor antal lette, modstandsdygtige mod stød, rigide beholdere indeholdende 10,0% total nitrogen, hvoraf 8,5% udgøres af en langsomt afgiveligt nitrogen, mens de resterende 1,5% udgøres af ureanitrogen.

4. Fremgangsmåde ifølge krav 1, **kendetegnet** ved at nævnte organiske fiber omfatter genanvendt cellulose, nævnte genanvendte cellulose vaskes og opslæmmes i vand i en pulperindretning for at tilvejebringe en vanddispersionspulp med 3% tørmateriale, nævnte pulp spredes på et bevægeligt perforeret bælte, hvorpå nævnte såbeholdere skal fremstilles til enhver ønsket konfiguration og størrelse, på nævnte bevægelige perforerede bælte afgiver nævnte pulpdispersion vand for at tilvejebringe et mellemprodukt inkluderende omkring 30% restvand, nævnte perforerede bælte drives

kontinuerligt samtidig med at methylenurea coates derpå ved anvendelse af et filmcoaterapparat med en dyse eller spalte, nævnte methylenurea har et U:F = 1:1,0 molærforhold og et tørrestindhold på 65% og katalyseres, lige før anvendelse, med et 35% ammoniumphosphat, i et forhold på 100 g flydende methylenurea og 8 g ammoniumsulfatopløsning, for at tilvejebringe en katalyseret blanding, en mængde af nævnte katalyserede blanding sprøjtes på nævnte mellemprodukt ved 70% cellulose, straks efter nævnte coating bringes nævnte perforerede bælte til at passere gennem en 160°C ovn, hvor nævnte katalyserede methylenurea tørres, og nævnte cellulosepulp yderligere afgiver vand for at tilvejebringe et slutprodukt inkluderende 2% total restfugtighed, nævnte slutprodukt inkluderende et stort antal af nævnte lette, modstandsdygtige mod stød, rigide beholdere, som hver indeholder 5,5% total nitrogen, som fuldstændig udgøres af langsomt afgiveligt nitrogen.

5. Fremgangsmåde ifølge krav 1, **kendetegnet** ved at nævnte organiske fiber er træaffald, nævnte træaffald tilvejebringer, når bearbejdet med en fremgangsmåde ifølge de foregående krav, en såbeholder med et totalt nitrogenindhold på 17,5%, hvoraf 8,8% udgøres af organisk nitrogen, 7,8% af en langsomt afgivelig nitrogen, og det tilbageværende af 0,9% ureanitrogen.

6. Fremgangsmåde ifølge krav 1, **kendetegnet** ved at nævnte organiske fiber er en barkfiber.

7. Fremgangsmåde ifølge krav 1, **kendetegnet** ved at nævnte organiske fiber er en jutestoffiber, nævnte fiber opslæmmes i vand i et pulperapparat for at tilvejebringe en vanddispersionspulp, nævnte vanddispersionspulp spredes på et perforeret bælte, hvorpå nævnte såbeholdere skal fremstilles, på nævnte bevægelige perforerede bælte afgiver nævnte pulp vand for at tilvejebringe et mellemprodukt inkluderende omkring 40% restvand, svarende til omkring 60% juteklædestof, kontinuerligt drivende nævnte bevægelige perforerede bælte samtidig med at methylenurea coates derpå ved anvendelse af et filmcoaterapparat med en dyse eller spalte, nævnte methylenurea har et U:F = 1:0,6 molærforhold og et tørrestindhold på 70% og blandes, lige før anvendelse, med 35% phosphorsyre i et forhold på 100 g flydende methylenurea og 3 g phosphorsyreopløsning for at tilvejebringe en katalyseret blanding, nævnte katalyserede blanding sprøjtes på nævnte mellemprodukt, straks efter nævnte sprøjtning eller coating

bringes nævnte bælte til at passere gennem en 150°C ovn, hvor nævnte pulp tørres yderligere, hvorved yderligere vand afgives for at tilvejebringe et slutprodukt inkluderende en 2% total restfugtighedsindhold, derved tilvejebringende lette, modstandsdygtige mod stød, rigide såbeholdere indeholdende 4,0% total nitrogen, hvoraf 3,6% udgøres af et langsomt afgiveligt nitrogen, og de resterende udgøres af 0,4% ureanitrogen.

8. Såbeholder fremstillet ved hjælp af en fremgangsmåde ifølge et eller flere af kravene 1 til 7, **kendetegnet** ved at såbeholderen tilvejebringes ved hjælp af nævnte perforerede bælte, som omfatter et stort antal perforeringer udformet og med en størrelse sådan at såbeholderen har en parallelepipedumkonfiguration med størrelsen op til 600 mm i længde, x op til 400 mm i bredde, x og til 160 mm i højde, med et antal små hulrum eller brønde fra 1 til 680 (34 x 20), nævnte små hulrum har enten en lukket eller åben frontdel og et stort antal gennemgående huller med forskellige størrelser.

9. Såbeholder ifølge krav 8, **kendetegnet** ved at såbeholderen tilvejebringes ved hjælp af nævnte perforerede bælte, som omfatter et stort antal perforeringer udformet og med en størrelse sådan at såbeholderen har en bakke-konfiguration inkluderende hævede periferiske kanter, uden indre adskillelseselementer, nævnte såbeholdere med en størrelse på op til 600 mm i længde, x op til 400 mm i bredde, x op til 160 mm i ydre højde, og op til 145 mm i indre højde, hvor bunden af nævnte såbeholdere enten er eller ikke er forsynet med gennemgående huller.

10. Såbeholder ifølge krav 8, **kendetegnet** ved at såbeholderen tilvejebringes ved hjælp af nævnte perforerede bælte, som omfatter et stort antal perforeringer udformet og med en størrelse sådan at såbeholderen har en flad bakke-konfiguration, uden periferiske hævede kanter, derpå understøttes et dyrkningsunderlag, nævnte såbeholdere har en størrelse på op til 600 mm i længde, x op til 400 mm i bredde, x op til 160 mm i højde og en bunddel enten inkluderende eller ikke-inkluderende gennemgående huller.

11. Fremgangsmåde ifølge ethvert af kravene 1 til 7, **kendetegnet** ved at nævnte methylenurea og/eller methylolurea føjes til den færdige nævnte beholder ved anvendelse af en filmcoaterapparat med dyse.

12. Såbeholder til kimplanter og planter, ifølge kravene 8 til 10, **kendetegnet** ved at nævnte såbeholder er en blomsterpotte.