

A Plant Pot and a Method of Planting

Field of Invention

- 5 The present invention relates to the field of containers or pots for plants or the like, and to methods of planting using pots.

Background

- 10 Presently, there are different types of plant pots for use with different types of plants and planting media.

- A pot meant for containing soil as the planting medium must have drainage holes at the pot bottom, so that excess water in the pot may be drained away to prevent water
15 logging in the soil. Water-logged soil is unhealthy for plant growth, as soil is a decomposing medium and soaking plant roots in water-logged soil for a prolong period causes the roots to rot.

- On the other hand, a pot meant for containing hydro-culture (e.g. clay granules), water
20 retentive gels or other inert material as the planting medium must be able contain a volume of water large enough to submerge parts of the planting medium. This type of pot does not have drainage openings at the pot bottom, as the pot needs to be leak-proofed.

Due to the different requirements of different planting media and methods, a pot for soil and a pot for water-submerged planting medium cannot be used interchangeably.

This is inconvenient for the consumer, as the selection of a pot must follow a selection
5 of the planting medium and he cannot change his mind after buying the pot.

More specifically, a conventional pot for use with soil as the planting medium has upstanding walls which join to a flat base to form a container. The flat base is necessary for standing the pot in a stable manner. For water drainage, the base has one or several
10 drainage openings. Before filling the pot with soil, these drainage openings are usually covered with pieces of clay or tiles to prevent substantial leakage of the soil from the pot, while permitting water drainage. However, if the drainage openings are covered excessively, or is blocked too tightly, excess water cannot seep from the pot quickly enough. This could lead to water-logging in the soil, despite the provision of the
15 drainage openings.

In use, it is common for the pot to be placed in a water tray for collecting excess water that seeps through the drainage openings. However, water collected in the water tray tends to submerge the flat base of the pot. When this happens, despite sufficient
20 drainage of water from the soil at the top of the pot, the soil at the base of the pot is kept continuously flooded. This could lead to rotting of the roots at the bottom of the pot.

Generally, it is estimated that 90% of potted plants die of excessive watering, especially in private house holds (or under other layman situations). This is due in part to insufficient water drainage or to pots being incorrectly used with water trays such that the pot base is kept flooded for prolonged periods.

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Using the water tray has a further disadvantage of risking mosquitoes breeding in water collected in the tray. This is a major health hazard to human beings as mosquitoes carry and transmit deadly infections such as the dengue fever.

- 10 Ironically, if a pot is used correctly, i.e. has good drainage and the pot base is kept from being flooded, the plant in the pot may require frequent re-watering to hydrate the plant. However, most people tend to use excessive amounts of water, which is a wasteful and incorrect method of watering potted plants. It has been suggested to re-use water drained from the pot to water the plant. However, collecting and re-using drained water
- 15 is unhygienic and manually tedious.

- On the other hand, a pot for partially water-submerged planting media must be able to contain a volume of water large enough to soak the planting medium. Thus, the pot must have no drainage holes. Over time, dirt and silt tend to collect in the pot, which is
- 20 difficult to remove. One could try tipping the pot over to spill dirty water from the pot and then replenishing the pot with clean water. However, this risks the planting medium spilling out of the pot as well. The plant may also be damaged in the process. Thus, silt and dirt tend to be left to accumulate in the pot, which is unhygienic.

Whether a plant is planted in soil or water-submerged planting medium, a potted plant eventually dies when the plant develops excessive root growth in the confined space of a pot. The excess roots are caused to wind on themselves and strangle or suffocate the plant. To overcome this problem, the conventional solution is to re-pot the plant.

- 5 However, this solution comes with disadvantages. Firstly, this solution sometimes requires breaking the pot to extract the plant. Furthermore, the entangled mass of roots sometimes require pruning before the plant can be re-potted in a new pot with fresh soil/medium (typically, plant roots can be cut or pruned back by a third on a yearly basis, without any detriment to the plant). However, with inexperienced people, this
- 10 risks excessive pruning and the use of undue force to cut at the balls of entangled roots in order to prune the roots into a healthy shape, which may overly damage the roots. Furthermore, this inevitably damages to some extent the fragile web of fine roots that is necessary for water and nutrient absorption. Thus, even if a plant survives a re-potting exercise, it will take time for the primary or main roots and the web of fine roots to
- 15 rebuild. Such cut-and-slash way of re-potting and root pruning induces unnecessary stress on the plant and severely compromises the likelihood of healthy survival. Accordingly, potted plants typically have shorter lifespan and poorer health than ground plants.

- 20 Thus, it would be advantageous to provide a new kind of pot that reduces one or more of the described problems for the different planting media.

Summary of the invention

In a first aspect, the invention provides a plant pot comprising a base, the base defining an internal surface, which is continuous and concave, and the base having elongate perforations.

- 5 As the base defines a continuous and concave internal surface, the perforations are inclined downwardly in their arrangement, along the internal surface. Thus, the invention provides a possibility that the roots of a plant in the pot may grow through the perforations, guided by the continuous and concave internal surface of the pot following natural root growth patterns, i.e. downwardly, and the roots are able to proliferate out of
10 the confinement of the pot.

- Furthermore, the invention provides the possibility that the entire pot may be lifted to prune the roots growing out of the perforations without removing the plant out of the pot. This relieves disturbance to the plants and its rooting, preserves the high quality and
15 well-fertilised planting medium in the pot, assures continuous healthy root growth and increases the plant's lifespan.

- Furthermore, the invention provides a possibility of separating the planting medium in the pot from a reservoir of nutrient-containing water beneath the pot for continuously
20 hydrating and nourishing the roots that have grown through the perforations. In other words, in the case of a soil-potted plant, the invention makes it possible to hydrate the roots continuously without soaking the roots in water-logged soil and the chances of plant death from root rot is thereby lowered.

Furthermore, the perforations possibly direct water in the pot downwardly, smoothly and efficiently out of the pot to reduce water logging in the pot. Preferably, the pot further comprises a centre opening at the centre of the base to provide the possibility of complete water drainage from the pot.

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Preferably, the perforations are equidistantly spaced from each other and arranged radially about the centre of the base. This increases the likelihood that the naturally and gravitationally spreading roots will grow through the perforations and out of their confined space, i.e. well-spread roots of the plant will likely to grow into one of the perforations naturally and eventually.

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Preferably, the edges of the elongate perforations at the internal surface of the base are rounded. Thus, each perforation widens as the perforation extends inwardly, to encourage the growth of roots therethrough instead of winding on themselves within the pot. Preferably, the edges of the elongate perforations at the external surface of the base are also rounded. Thus, each perforation also widens outwardly.

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Preferably, the internal surface of the pot, and more particularly, the internal surface at the base of the pot, is substantially smooth. This provides the possibility that the roots are unlikely to cling to the internal surface and growing into entangled roots masses as a result.

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Furthermore, this provides a possibility that the plant may be more easily re-potted, as reduced root clinging helps in removing the plant from the pot with less root damage.

Furthermore, the continuous internal surface of the pot, being free from dead-end dents or corners in which plant roots may be entangled in congestion, also provides the possibility of easy removal of the plant from the pot. Thus, the invention provides the possibility of a reduced damage to the delicate roots of a plant during its re-potting or
5 re-planting into the ground.

Preferably, the external surface of the base comprises a rim that extends from the external surface. The rim provides the possibility of a substantial gap between the base
10 of the pot and the surface on which the pot is placed. This advantageously reduces the possibility of water collecting and stagnating beneath the pot. Furthermore, this provides the possibility that roots may proliferate for a distance from the base of the pot without being obstructed by the surface. This also provides the possibility that the pot may be stood in a tray of water without submerging the base of the pot and the roots
15 growing out of the pot may soak in the water in the tray. This advantageously reduces the expenditure and effort of frequent re-watering, as water drained from the pot and collected in the tray is useable to continuously hydrate the roots growing through the base of the pot.

20 Preferably, the rim is dimensioned to couple to a water container, wherein the coupling between the water container and the rim is capable of retaining water in the pot. Thus, the pot is configurable to be used either with partially water submerged planting medium or with soil, which requires drainage of water from the pot.

In a second aspect, the invention provides a plant pot kit comprising a pot having a base, the base adapted for growth of roots therethrough, a water container for positioning the pot over such that a pre-determined distance is provided between the pot and water in the water container, wherein water in the container is capable of soaking roots grown
5 through the base.

In a third aspect, the invention provides a pot assembly comprising a pot, a pot base having perforations, a closing means for closing over the perforations in a leak-proof fitting.
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In a fourth aspect, the invention provides a method for growing a plant comprising the step of positioning a pot over water to allow plant roots growing from the pot to be partially immersed in the water.

15 In a fifth aspect, the invention provides a plant pot comprising a base, the base having a sieve-structure, wherein the sieve-structure allows the roots of a plant in the pot to grow through the sieve-structure and restricts the leakage of the planting medium in the pot through the sieve.

20 Advantageously, the sieve-structure also provides the possibility of filtering dirt and silt out of a water-submerged or partially water-submerged planting medium, e.g. hydro culture medium, and collect the dirt and silt outside the plant pot. Thus, the invention provides the possibility of a cleaner and healthier environment along with the possibility of an easier and faster planting medium cleaning process.

Thus, it is possible that commercial florists or horticulturalists are able to use the invention to provide that commercial soil-potted plants left in the outdoors remain continuously well-hydrated with reduced likelihood of drowning in water-logged soil,
5 even in the event of heavy rainfall. Furthermore, the invention possibly eases the tasks of plant-care and maintenance service companies, by reducing maintenance frequency and keeping the environment cleaner and safer.

Figures

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It will be convenient to further describe the present invention with respect to the accompanying drawings that illustrate possible arrangements of the invention. Other arrangements of the invention are possible and consequently the particularity of the accompanying drawings is not to be understood as superseding the generality of the
15 preceding description of the invention.

Figure 1a is a perspective view of an embodiment of the invention,
Figure 1b is a plan view of the embodiment of Figure 1a,
Figure 1c is a side view of the embodiment of Figure 1a,
20 Figure 1d is a bottom view of the embodiment of Figure 1a;
Figure 2a is shows the perforations of Figure 1a in isolation from the rest of the embodiment;
Figure 2b is a sidewise cross-sectional view of the perforations of Figure 2a along the line A-A;

Figure 2c is an illustration of the embodiment of Figure 1a in use;

Figure 2d is a cross-sectional view of the perforations of Figure 1a;

Figure 3a is a bottom view of a rim in the embodiment of Figure 1a, in isolation from the rest of the embodiment;

5 Figure 3b is a side view of the rim of Figure 3a;

Figure 3c shows an O-ring used with the rim of Figure 3a;

Figure 4a is a top perspective view of a further portion of the embodiment of Figure 1a,

Figure 4b is a bottom perspective view of the further portion of Figure 4a,

Figure 4c is a cross-sectional side view of the further portion of Figure 4a,

10 Figure 4d is a side view of the further portion of Figure 4a;

Figure 4e illustrates the embodiment of Figure 1a in used with the further portion of the embodiment of Figure 4a;

Figure 5 further illustrates the embodiment of Figure 1a in use;

Figure 6a to 6f shows further portions of the embodiment of Figure 1a; and

15 Figure 7 shows a variation of the embodiment of Figure 1a.

Description of embodiments

The figures show an embodiment of the invention, which is a pot 100 for a plant.

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Figure 1 is a perspective view of the pot 100. Figure 1b is the corresponding top view.

Figure 1c is a cross-sectional view of the pot 100 from the side. Figure 1d is the corresponding bottom view.

The pot 100 has a base 102, or bottom, which is concave from the top view and is substantially curved or rounded like a bowl. The internal surface of the base 102 is smooth and continuous.

5 The base 102 joins the wall 101 of the pot 100 such that the internal surface extends continuous from the wall 101 of the pot 100 to the base 102 of the pot 100. In this particular embodiment, where the wall 101 of the pot ends and where the base 102 begins is not clearly defined due to the curved and continuous nature of the internal surface. In other words, there are no real walls in this embodiment and the internal area
10 of the pot 100 defines one continuous surface. Thus, the pot 100 is free of sharp corners forming dead-end recesses where the wall 101 joins the base 102 that can trap the growing roots.

The base 102 has a plurality of perforations 104, preferably in elongate form, such as
15 slits or slots, inclined in a downward direction according to the curved internal surface of the pot 100. The elongate perforations 104 are arranged equi-distanced from each other, in a pattern spreading the elongate perforations 104 radially, or concentrically, around the centre of the base 102. This arrangement of the perforations 104 is shown in isolation from the rest of the pot 100 in Figure 2a.

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The base 102 has a further perforation in the form of a hole 103 in the centre of the base, i.e. at the lowest point in the concave base 102.

Figure 2b shows a sidewise cross-sectional view 202 of the perforations 104 at the base 102 of the pot 100. The edges 204 of the perforations 104 are rounded such that there is no sharp corner or a highly defined edge. In other words, the edges 204 between the internal surface of the base 102 and perforations 104 (and the centre hole 103) are rounded. Thus, the internal surface of the pot 100 gently turns along the rounded edges 204 into the perforations 104 and the centre hole 103. This provides an effect that the perforations 104 and the centre hole 103 increasingly widens as they extend towards the interior of the pot 100 and the exterior of the pot. Furthermore, the surfaces of the rounded edges and the walls of the perforations, and the centre hole, are also smooth so that the roots are unlikely to hinge or attach to the surface.

Similarly, external surface of the pot base 102 also gently turns along rounded edges into the perforations 104 and the centre hole 103.

As seen in Figures 1a to 1c, the external surface of the base 102 is moulded or attached with a rim 108 such that the rim 108 extends from the bottom of the pot 100. Figures 3a and 3b further illustrates the rim 108 in isolation of the rest of the pot 100.

The rim 108 is dimensioned such that the perforations 104 at the bottom of the base 102 are positioned within the circumference or perimeter of the rim 108.

The edge at the extended end of the rim 108 has two cut portions 105 which break the continuity of the edge.

Figure 2c shows the pot 100 in use with plants and soil as the planting medium. When newly potted, the roots of the plant naturally grow and spread downwardly in the pot 100. The continuous internal surface of the pot 100, being free from dead-end corners, dents or recesses, reduces the likelihood of roots being trapped to grow into congestion
5 in such dead-ends. Some of the roots tend to grow a little sidewise and eventually reach the sidewall 101 of the pot 100. However, the smooth internal surface of the pot 100 reduces the likelihood that the roots could secure themselves and cling to the internal surface of the pot 100. The continuous and concave internal shape of the pot 100 is then able to encourage root growth further downwards, along the sidewall 101 and towards
10 the base 102 of the pot 100 (as shown by the thick arrows in Figure 2c).

The radial or concentric arrangement of the elongate perforations 104 provides an equidistant spread of the perforations in all directions from the centre of the base 102. Thus, as the roots grow and spread in the pot 100, the roots eventually encounter one of the
15 perforations 104. The downward inclination of the elongate perforations 104 along the curved internal surface of the pot 100 conforms to the natural tendency of roots to grow downwardly. This further encourages the roots to grow into the perforations 104 and out of the pot 100. In this way, the pot 100 possibly reduces the amount of roots stuck in some part of the base 102 and winding back upwards into the pot 100.

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Furthermore, the rounded edges of the perforations 104 provide that the perforations are wider at the internal surface of the pot 100, but narrows and depresses downwardly and gently into the perforations 104. Thus, as shown in Figure 2d, the perforations 104 are able to receive the tips of growing roots and to allow the roots to grow further

downwardly along the rounded edges of the perforations 104, into and through the perforations 104.

Accordingly, the pot 100 provides a possibility that the plant roots may grow along the
5 internal surface of the base 102 and towards the bottom of the base 102 and out of the pot 100, reducing root entanglement or congestion inside the pot 100. Thus, the roots 302 are able to continue growing indefinitely outside the pot 100.

The roots 302 growing out of the pot 100 can then be pruned to maintain neatness and
10 also healthy plant and root growth, without causing harm to the primary roots (304) and the fissure/fine spidery rooting inside the pot 100. In other words, the perforations 104 allow easy access to excess root growth outside the pot 100 for caretaking and therefore possibly extending the lifespan of the plant substantially. Furthermore, this may also reduce or even eliminates the need of frequent re-potting (e.g. upgrading in pot size) the
15 growing plant. In comparison, the few, i.e. one to three, circular drain holes found in conventional pots for use with soil have a greater chance of being missed by the growing roots; there is a higher chance that the roots may simply grow over the few circular holes instead of through the holes, as the holes are few and are not dimensioned or positioned to conform to the natural root growth pattern. Furthermore, the sharp
20 corner formed by the flat base and wall of the conventional pot tends to trap roots grown into the corner.

The perforations 104 are dimensioned to encourage the roots of the plant to grow through, as also shown in Figure 2d, while sufficiently retaining the planting medium in

the pot 100. For example, each elongate perforation 104 at the base 102 is wide enough to allow the plant roots to grow therethrough while restricting excess leakage of soil (or whichever planting medium used). Typically, the elongate perforation is at least 3 mm wide. More preferably, each elongate perforation 104 is at least 4 mm wide. It is also
5 preferable that each elongate perforation 104 is at least 4 cm long, so that there is ample distance, length or space in the perforation 104 for a growing root to encounter the perforation 104; this improves the chances of the root eventually encountering and growing into and through a perforation 104. More preferably, the length of the perforation is at least 5 cm long. In any case, the skilled man will understand that the
10 lengths of the perforations may vary according to the size of the pot 100 or the space available at the base of the pot 100.

In the present embodiment 100, the perforations 104 are located within the circumference of the rim 208 so that water draining from the water container or the
15 roots growing through the perforations 104 is directed to the space 107 beneath the pot 100 defined by the rim 108.

If the pot 100 is used outdoors, the spread of the equi-distanced, radial and concentric arrangement of the elongated perforations 104 helps to direct and drain water smoothly
20 and efficiently out of the pot 100 and prevent water logging in the soil. The centre hole 103 provides the possibility that water cannot congest in the centre of the curved base 102.

Advantageously, the rim 108 elevating the base 102 of the pot 100 from the ground prevents collection of stagnant water immediately beneath the pot 100. Furthermore, the two cut portions 105 at the edge of the rim 108 allow water within the space 107 defined by the rim 108 to escape.

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Since the base 102 of the pot 100 is elevated by the rim 108, the rim 108 also provides the possibility of placing the pot 100 into a conventional water tray without soaking the base 102 of the pot 100 in water. A conventional water tray has a typical depth of 1 to 3 cm. Thus, the rim 108 may be more than 3 cm high, at 109, so that the base 102 of the
10 pot 100 is maintained above the surface of water when stood in a conventional water tray. However, more preferably, the rim 108 has a height 109 of at least 5 cm to further ensure a distance above the water in a conventional water tray.

The roots that have grown through the perforations 104 are thus able to dip into water in
15 the conventional water tray and remain continuously hydrated. Soaking roots continuously in clean water is without risk of root rot which occurs only in water-logged soil or any other decomposing planting medium.

In any case, it is preferable that the height 109 of the rim 108 is at least twice the depth
20 of whichever water tray the pot 100 is meant to be stood in (such as when the pot 100 is sold as a planting kit which includes the tray).

Thus, whether the pot 100 is placed inside a water tray or directly on the ground, the rim 108 maintains a gap between the base 102 and the surface immediately below. This also

provides a space into which the roots are able to grow through the perforations 104 in the base 102, without being immediately stopped by a surface beneath.

In a variation of the embodiment, the pot 100 is used with a customised water container 400. Figure 4a is a perspective view of the customised water container 400 from the top. Figure 4b is the perspective view from the bottom. Figure 4c is a cross-sectional view from the side. Figure 4d is the side view corresponding to the cross-sectional view of Figure 4c.

The customised water container 400 is defined by a base 403 and a wall 401. The walls 401 comprise a circumferential groove 404 shaped to receive and couple to the rim 108 at the base of the pot 100. When the circumferential groove 404 receives the rim 108, the rim 108 and the circumferential groove 404 cooperate to form a leak-proof and watertight fit. Thus, the customised water container 400 and the rim 108 form a single pot unit when coupled together that may be filled with water.

In use with soil as the planting medium, the customised water container 400 may be filled with water before being attached to the rim 108 of the pot 100 to provide continuous hydration to the roots growing through the base of the pot 100.

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Figure 3c shows a rubber O-ring. The O-ring may be fitted to the edge 303 of the rim 108 (indicated in Figure 3b) to help leak-proof the coupling or contact between the edge 303 of the rim 108 and the groove 401 in the wall of the customised water container 400. The O-ring also provides sufficient resistance to prevent the customised water

container 400 from separating away from the rim 108 easily, but preferably without need of overly strenuous effort. Other possible methods for leak-proofing or waterproofing is possible, such as surface treating the rim 108 and/or the customised water container 400, as would be known to a man skilled in the art.

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The external bottom of the customised water container 400 further comprises a further O-ring or a rubber band 405 to provide a grip or resistance for the user on the customised water container 400, to facilitate separating the customised water container 400 from the rim 108. In this configuration, a user can detach the customised water container 400 from the rim 108 by a twisting and pulling the customised water container 400 against and away from the rim 108 e.g. twisting and pulling the customised water container 400 by a third of the circumference of the customised water container 400. In an alternative embodiment, the bottom of the water container 400 is capped with a rubber cap to provide the grip in place of the O-ring. Figure 4b shows that there are three seats 406 at the bottom of the customised water container 400 to provide a frictional grip on the ground, when the customised water container 400 is placed on the ground. When a rubber cap is used to cap on the bottom of the water container 400, the seats are replaced by the rubber cap.

Other possible methods of providing a grip would be known to a man skilled in the art, such as roughening or chemically treating the surface at the bottom edge of the customised water container 400.

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Advantageously, the leak-proof fitting formed by the rim 108 and the circumferential groove 404 may prevent spillage of water if the pot 100 is tipped over. Furthermore, the water may also be kept from evaporating away quickly due to the leak-proof fitting between the rim 108 and the customised water container 400. Thus, water in the

5 customised water container 400 may be changed less frequently than the watering of a plant in a conventional pot. In this way, the embodiment possibly provides an efficient way of saving water. Furthermore, nutrients may also be kept from evaporating away easily, which improves nutrient absorption from the water. Furthermore, access to the water in the customised water container 400 may be blocked to mosquitoes or other

10 insects by the watertight fitting. In one preferred embodiment, customised water container may be dimensioned for approximately 6-8 decilitres of water.

Furthermore, as illustrated in Figure 4e, the pot 100 is also useable with non-soil planting medium when the rim 108 is closed with the customised water container 400 in

15 a leak-proof fit; the pot 100 may be filled up with water to submerge or partially submerge a clean non-decomposing, airflow permitting planting medium. Accordingly, the consumer does not need to pre-decide on the planting medium when buying the pot 100 and is free to change his mind about the planting medium anytime. Furthermore, silt or other dirt accumulated in the pot 100 may sink through the perforations 104 and be

20 collected in the customised water container 400 for disposal. Furthermore, it is also possible to remove the customised water container 400 to wash the silt or dirt from the planting medium under running water, as water can flow and carry the silt and dirt through the perforations 104. Thus, the water-submerged planting medium in the pot 100 may be kept clean. This improves the hygiene of the environment in the pot 100.

Furthermore, if the pot 100 is made of glass, removal of the silt and dirt could provide a more pleasant display.

Preferably, the pot 100 is available in a range of sizes and shapes. However, more preferably, the customised water container 400 and the rim 108 at the base 102 of the pot 100 are standardised to a single size. This would ease manufacturing efforts, and allow consumers to choose a preferred pot design, shape or size without the hassle of finding a customised water container 400 of the right size, i.e. one water container size fits all pot rims 108.

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Figure 5 illustrates the pot 100 in use with a plant 501 and fitted to a modular display stand 600. The modular stand 600 is shown in parts in Figure 6a to 6f.

Figure 6a and 6b show respectively the plan view and a side view of a stand top 602 which the pot 100, with or without the customized water container 400, can be attached to or be placed in.

Figure 6c and 6d show respectively the bottom view and a side view of a bottom stand 604, to which the top stand 602 can be coupled to assemble the display stand 600.

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The top and bottom stands 602, 604 need not be coupled one to another directly but to a stand insert 606 in between, to provide the possibility of varying the height of the display. Figure 6e and 6f show respectively the plan view and the side view of the stand insert 606, to which the top stand 602 can be coupled (to the top of the stand insert 606),

and to which the bottom stand 604 can be coupled (to the bottom of the stand insert 606).

Thus, the stand insert 606 provides the possibility that the pot 100 maybe placed higher
5 up from the ground if more space beneath the pot is needed, such as when a hanging
plant, which is growing, needs space beneath it to freely hang down to be displayed and
to assure its continuous health. Conversely, the pot 100 may be placed nearer to the
ground if the plant is the sort that grow upwards quickly, such as in the case where there
is a ceiling above the plant, for example, when a plant has grown too tall, the insert can
10 be removed from the stand assembly to lower the plant to a more sensible height for
viewing.

In figure 5, the pot 100 is shown fitted to the modular stand 600 in the assembled form.
As described heretofore, the roots 502 of the plant grow downwardly in the pot 100 and
15 spread, at 503, towards the base of the pot 100. The curved and smooth internal surface
of the pot 100 discourages the roots from clinging to the internal surface and guides the
roots 502 towards the perforations 104. The roots 502 extend through the perforations
104 and out of the pot 100, at 504, and dip into water and nutrients in the customised
water container 400 beneath the base 102.

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Optionally, it is possible to fit the pot 100 to the modular stand system 600, with or
without the customised water container 400, to cater for different planting media (e.g.
soil or non-soil) or maintenance effort (e.g. frequency of water replenishment).

Accordingly, the pot 100 as described provides the possibility of placing soil-potted plants outdoors in rain accessible areas, as the water will freely drain off and escape through rills along the stand floor plate. Thus, the pot 100 system as described is suitable for both indoor and outdoor use. Furthermore, the pot 100 provides that the

5 plant 501 may have a long lifespan and good health, due to the unhampered root growth beyond the base 102 of pot 100 and the possibility of maintaining and pruning the roots growing out of the base 102 without removing the entire plant from the pot 100.

Furthermore, the plant may be continuously hydrated through its extended rooting system 504 with nutrient-filled water in a water container beneath the pot 100 but yet

10 the risk of root rot caused by water-logged soil may be greatly reduced.

Accordingly, an embodiment of the invention has been described which may be particularly advantageous to both commercial and amateur planters who need to re-pot a plant occasionally. Plants potted in the pot 100 do not have, or have reduced amount of,

15 roots clinging to the internal surface of the pot. Therefore, a healthy plant can be removed safely from the pot 100 and re-potted for sale or planted in the ground with improved assurance of healthy re-growth and survival. This also leads to financial savings due to reduced likelihood of plant death or stunted growth. Furthermore, it is possible to use the pot 100 with or without the customised water container 400 for a

20 variety of planting media and planting methods. Accordingly, this increases the variety of plants that can be grown using the same pot 100. This translates to expanding the usage of the pot 100 and the customised water container 400, which amounts to better and more cost-effective spending for the consumer.

However, the skilled man will understand that variations to the embodiments are possible within the scope of the invention.

For example, in alternative embodiments, the water container 400 may be fitted to the rim 108 by other mechanisms such as snap-fitting, screwing, fasteners like clips, and so on (not shown). In yet a further embodiment, the pot base 102 does not have a rim 108. Instead, the customised water tray 400 and the perforations 104 are dimensioned to be able to couple directly to each other to form a leak-proof coupling between the base 102 and the customised water container 400.

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The skilled man will understand that by 'smoothened' or 'rounded' edges 204 of the perforations 104, it is intended herein that variations such as chamfered edges, smoothened edges or edges having corners in any other way softened, are included. For example, in a variation of the embodiment, the edges of the perforations 104 and the centre hole 103 which extends to the external surface of the pot base 102 are not smoothly rounded but chamfered to provide a slope to encourage the roots to grow downwardly into the perforations 104.

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It should be noted that the internal surface of the pot is 'smooth' so as to reduce the likelihood of roots clinging to the internal surface, which is distinguished from the surface being 'continuous' such that it has no sharp corners, dents, recesses or dead-ends which entrap roots.

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The internal surface of the pot 100 may be made of plastic, porcelain, glass, metal, polished fibre glass, varnished wood or bamboo, glazed clay or any material which is glazed, lacquered or in any way chemically treated so as to provide a surface smooth enough that the likelihood of roots clinging to the surface is reduced. Preferably, the material is stable and inert and can withstand corrosion or decomposition in the presence of soil, fertilisers, water and other planting substances. Plastic such as polypropylene is one of the preferred material as plastic pots can be molded en mass, has a smooth surface by nature and is light and yet strong. As a comparative example, the conventional plant pot made of unglazed clay encourages plant roots to cling to the internal surface of the pot.

Although the figures of the embodiment of the invention show that the pot 100 is circular from the top view, it is possible that the pot 100 is oval or in other shapes from the top view. Figure 7 shows an embodiment in which the top view of the pot 100 would be square, there being four walls defining the pot 100, as long as the base 102 forms a bowl-like, continuous and concave internal surface without any corner (or, at least, a highly softened corner) where the walls 101 join the base 102.

In further embodiments, instead of a rim 108 that supports the pot 100 from the ground, the pot 100 is hung, or suspended from the ground by a stand or rope. In this configuration, if the pot 100 is not fitted with the customised container 400 of Figure 4, the pot 100 may be simply suspended over a container of water to allow roots grown through the base of the pot 100 to be hydrated.

In yet a further embodiment, the perforations 104 may not be elongate in shape. For example, the plurality of perforations 104 are round or in other shapes. In any case, the plurality of perforations 104 are dimensioned and are so numerous such that the perforations 104 define a sieve-structure at the base 102 of the pot 100. The sieve-structure is capable of restricting soil or other planting medium from leaking through the perforations 104 while yet allowing drainage of water from the pot 100 and also a substantial amount of plant roots to grow therethrough. If a submerged (or partially submerged) planting medium is used, the sieve-structure is also capable of allowing silt or dirt to filter through while retaining the planting medium in the pot 100. It is preferable that the sieve-structure has a perforation-to-area ratio of 3% to 60%, depending on the strength of the material the pot 100 is made of. The skilled man will understand that, whether the area containing the perforations is the entire internal surface of the pot 100 or just a localised area at the base of the pot 100 as seen in Figure 1a, this perforation-to-area ratio of 3% to 60% applies. In other words, the skilled man will understand that variations of the embodiment include pots 100 in which a small base 102 area has the perforations or sieve-structure (as in the embodiment showing in Figure 1) and also pots 100 in which the entire internal surface area functions as the base 102, having perforations distributed throughout to provide a larger sieve-structure.

Claims

1. A plant pot comprising
a base;
5 the base defining an internal surface which is continuous and concave; and
the base having elongate perforations.
2. A plant pot as claimed in claim 1 wherein the elongate perforations are equidistantly
spaced from each other.
- 10 3. A plant pot as claimed in claim 2, wherein the elongate perforations are arranged
radially about the centre of the base.
4. A plant pot as claimed in any one of the preceding claims wherein the edges of the
15 elongate perforations by the internal surface of the base widen towards the interior
of the plant pot.
5. A plant pot as claimed in claim 4 wherein the edges of the elongate perforations by
the internal surface of the base are rounded.
- 20 6. A plant pot as claimed in any one of the preceding claims wherein each elongate
perforation is at least 3 mm wide.

7. A plant pot as claimed in claim any one of the preceding claims wherein each elongate perforation is at least 4 cm long.
8. A plant pot as claimed in claim any one of the preceding claims further comprising a
5 centre opening at the centre of the base.
9. The plant pot as claimed in any one of the preceding claims wherein the base has an external surface, the external surface comprising a rim that extends from the external surface.
- 10
10. The plant pot as claimed in claim 9 wherein the rim is configured to couple to a tray.
11. The plant pot as claimed in claim 10 wherein the coupling is configured such that, when the rim is coupled to the tray, the pot is capable of containing water.
- 15
12. The plant pot as claimed in claims 9 to 11 wherein the rim has a height greater than 3 cm.
13. The plant pot as claimed in claim 12 wherein the rim has a height greater than 5 cm.
- 20
14. The plant pot as claimed in any one of claims 9 to 13 wherein the rim has an edge extending away from the external surface, the edge having at least one cut portion.

15. The plant pot as claimed in any one of claims 9 to 14 wherein the rim surrounds the elongate perforations and the centre opening.
16. The plant pot as claimed in any one of the preceding claims wherein the internal
5 surface of the pot is substantially smooth.
17. A plant pot kit comprising
- a pot having a base, the base adapted for growth of roots therethrough;
- a water container for positioning the pot over, such that a pre-determined
10 distance is provided between the pot and water in the water container; wherein
water in the container is capable of soaking roots grown through the base.
18. A plant pot kit as claimed in claim 17, wherein the pot has a substantially smooth
internal surface.
- 15
19. A plant pot kit as claimed in claim 17 or claim 18 wherein the internal surface of the
base of pot is concave.
20. A plant pot kit as claimed in any one of claims 17 to 19 wherein the pot comprises a
20 plurality of perforations, the perforations adapting the base of the pot for growth of
roots therethrough.
21. A plant pot kit as claimed in 20 wherein the perforations are equidistantly spaced
from each other.

22. A plant pot kit as claimed in claim 20 or claim 21 wherein the perforations are elongate.
- 5 23. A plant pot kit as claimed in claim 22 wherein the perforations are in the form of slits arranged in a radial manner around the centre of the base.
24. A plant pot kit as claimed in any one of claims 20 to 23 wherein each perforation is at least 3 mm wide.
- 10 25. A plant pot kit as claimed in any one of claims 22 to 24 wherein each perforation is at least 4 cm long.
- 15 26. A plant pot kit as claimed in any one of claims 20 to 25 wherein each of the perforations widens towards the interior of the pot.
27. A plant pot kit as claimed in claim 26 wherein the perforations have edges by the internal surface of the pot which are rounded.
- 20 28. A plant pot kit as claimed in any one of claims 17 to 27 further comprising a centre opening in the centre of the base of the pot.
29. A plant pot kit as claimed in any one of claims 17 to 28 wherein the external surface of the base comprises a rim.

30. A plant pot kit as claimed in claim 29 wherein the rim has a height greater than 3 cm.
- 5 31. A plant pot kit as claimed in claim 30 wherein the rim has a height greater than 5 cm.
32. A plant pot kit as claimed in any one of claims 17 to 31 wherein the base is configured to be coupled to the water container.
- 10 33. A plant pot kit as claimed in claim 32 wherein the coupling between the water container and the base is leak-proof.
34. A pot assembly comprising
- 15 a pot, the pot having a base which has perforations; and
a closing means for closing over the perforations in a leak-proof fitting.
35. A pot assembly as claimed in claim 34 wherein
- 20 the pot base further comprises a protruding rim on the bottom surface of the
base, the rim being dimensioned and located to surround the perforations; and
the closing means being capable of closing the rim to form the leak-proof fitting.
36. A method for growing a plant comprising the step of

positioning a pot over water to allow plant roots growing from the pot to be partially immersed in the water.

37. A method as claimed in claim 36 further comprising the step of

5 trimming the plant roots that extends from the pot.

38. A method as claimed in claim 36 or claim 37 wherein the pot has a base in which the plant roots grow through the base.

10 39. A plant pot comprising

a base;

the base having a sieve-structure; wherein

the sieve-structure allows the roots of a plant in the pot to grow through the sieve-structure and restricts the leakage of the planting medium in the pot
15 through the sieve.