

on the crops growing in the container 110. The power to the lighting means 60 and the fluid supply to the sprinkling means 52 are routed through the container 10 via routing means 17 that run along one side of the container 10. The container 110 is further provided with connecting means 40 to enable services to be routed up a stack 12 of containers 10 when the containers 10 are located in the growing system.

It will be appreciated that although in Figures 6 the routing means are shown as mounted on the container 10, it is possible to form a container 10 such that the container comprises mouldings suitable to act as routing means 17.

Figures 6a to 6c show a further forms of container 110 from the stack 12, the container 10 comprising various configurations of lighting means 60. As shown in Figures 6a and 6b, the lighting means 60 may comprise a lid containing suitable bulbs, LEDs or any other suitable form of lighting 60. The lid may be removably attached to the container 10 and fold away during removal of the container 10 from the stack 12.

Alternatively, as shown in Figure 6c the lighting means 60 may be provided in the base of a container 110 to light the container 110 below in the stack 12.

Figure 7 shows an alternative form of lighting arrangement in accordance with the invention. Figure 7 shows a portion of the growing system comprising uprights of the framework 14. Located within the framework 14 are stacks 12 of growing containers 110. The growing containers 110 are of the type comprising a tray-like base and a box-type supporting framework mounted above to form a support for the growing container 110 in the stack 12.

It will be appreciated that the box-type framework of the growing container 110 may comprise a separate structure fixedly mounted on to the tray or may comprise an integrally formed structure with the tray-like base.

The growing container 110 further comprises a guide portion 114' positioned along two of the short sides of the growing container 110 at the top of the box-type support structure. The uprights of the growing system framework 14 further comprise a guide portion 114 running substantially parallel to the uprights. The guide portion 114 of the uprights and the guide portion 114' of the growing container 110 are positioned such that when a growing container 110 is located within a stack 12 within the framework 14, the two guide

CLAIMS

1. A growing system comprising: a first set of substantially parallel rails or tracks and a second set of substantially parallel rails or tracks extending transverse to the first set in a substantially horizontal plane to form a grid pattern comprising a plurality of grid spaces; a plurality of storage containers 110 arranged in stacks 12, located beneath the grid spaces and within a series of uprights forming a framework 14; at least one load handling device 30 disposed on the tracks, arranged to move laterally above the stacks 12, the or each load handling device 30 comprising a lifting device arranged to lift at least one container 110, or part thereof, from a stack 12; in which the system comprises a series of lighting means 60, the lighting means being deployable from a first position adjacent a container 110 in the stacks 12 to a second position above the container 110, such that the light emitted by the lighting means is evenly distributed across the growing volume of the container 110.
2. A system according to claim 1 wherein the lighting means 60 are moved from the first position to the second position by a mechanism located on the uprights of the framework.
3. A system according to claim 2 wherein the mechanism 115 comprises engaging means located on the uprights, said engaging means engaging the lighting means.
4. A system according to claim 3 wherein the lighting means comprise panel means located on ribbon means, said ribbon means engaging with the engaging means located on the uprights.
5. A system according to any one of claims 2 to 4 wherein the mechanism comprises a worm gear mechanism, said worm gear mechanism comprising a threaded rod located on the uprights and the engaging means comprises a toothed wheel.

6. A growing system comprising: a first set of substantially parallel rails or tracks and a second set of substantially parallel rails or tracks extending transverse to the first set in a substantially horizontal plane to form a grid pattern comprising a plurality of grid spaces; a plurality of storage containers 110 arranged in stacks 12, located beneath the grid spaces and within a series of uprights forming a framework 14; at least one load handling device 30 disposed on the tracks, arranged to move laterally above the stacks 12, the or each load handling device 30 comprising a lifting device arranged to lift at least one container 110, or part thereof, from a stack 12; in which each container comprises a plastics portion 120, said plastics portion 120 comprising translucent material for transmitting light incident thereon to the growing volume of the container 110 in an even distribution across the container 110.
7. A system according to claim 6 wherein the system further comprises lighting means 60, said lighting means 60 being positioned adjacent the plastics portion of each container 110, light emitted by said lighting means 60 being incident on the plastics portion 120 of the container 110, said emitted light being dispersed throughout the plastics portion and transmitted toward the growing volume 122 of the container 120.
8. A system according to claim 6 or 7 in which the plastics portion further comprises a mirrored portion acting so as to reflect light incident on the mirror toward the growing volume 122 of the container 110.
9. A system according to any one of claims 6 to 8 wherein the plastics portion comprises a lid portion of the container 110.
10. A system according to any one of claims 6 to 8 wherein the plastics portion comprises a base portion of the container 110.
11. A system according to any preceding claim wherein the lighting means 60 comprises light emitting means, emitting light of a wavelength or range of wavelengths suitable for the cultivation, control or maintenance of living organisms.
12. A system according to any preceding claim, wherein the living organisms comprise growing crops or organisms under research and development.

13. A system according to any preceding claim, wherein a proportion of the containers 110 comprise growing crops.
14. A system according to any preceding claim wherein a proportion of the containers comprise organisms under research and development.
- 5 15. A system according to any preceding claim, wherein some or all of the containers comprise power supply means.
16. A system according to any preceding claim, wherein some or all of the containers comprise power control means.
- 10 17. A system according to any preceding claim wherein some or all of the containers comprise sensor means and data logging means for monitoring the output of the sensor means.
18. A system according to any preceding claim wherein some or all the containers 10 comprise communication means for communicating with adjacent containers 10 or with a central communications manager.
- 15 19. A system according to any preceding claim wherein some or all of the containers 10 comprise heating means for heating the contents of the containers 10.
- 20 20. A system according to any preceding claim wherein some or all of the containers 10 comprise cooling means for cooling the contents of the containers.
21. A system according to any preceding claim wherein some or all of the containers 10 comprise a reservoir 54, the reservoir 54 acting as a fluid sink in the container 10.
22. A system according to any preceding claim wherein some or all of the containers comprise lighting means 60.
- 25 23. A method of growing organisms within a growing system according to any preceding claim comprising the steps of:
 - a. providing growing means within a storage container 110;
 - b. positioning the container 110 within a storage system;
 - c. providing required light, water and nutrients;
 - d. moving the containers 110 using at least one robotic load handling device
 - 30 30 operable on a grid system above the containers 110; wherein the light

is provided via lighting means deployable from a first position adjacent the sides of the containers 110 to a second position above the containers 110.

24. A method according to claim 23 comprising the further steps of:

- 5 e. providing sensor means and data logging and storage means within a storage container 10;
- f. providing communication means to communicate data logged to a central data logging device;
- g. monitoring the data received;
- 10 h. removing containers 10 during the growing cycle of the organism within a container 10 to provide water and nutrients as necessary.

25. A method according to claim 23 or 24 comprising the further steps of:

- i. providing means for controlling the temperature within the container 10;
- 15 j. providing means for monitoring the temperature within the container 10;

26. A method according to any one of claims 23 to 25 comprising the further step of providing lighting means 60 within each container 10, the lighting means 60 emitting light of a predetermined wavelength suitable for the plant being grown in the container 10.

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27. A method according to claim any one of claims 23 to 36 further comprising the step of controlling the power to the or each service.