

SUMMARY

5 [0005] The present disclosure describes a planter, a plant tower, and a greenhouse that includes a planter having a longitudinal body defining at least two longitudinally extending liquid channels, the longitudinal body including one or more mounting ports configured to enable coupling of a conduit to the longitudinal body; and at least two plant holders defined in the body, the plant holders spaced on the outer circumference of the longitudinal body, each one of the at least two plant holders in fluid flow communication with one of the at least two longitudinally extending liquid channels. In some implementations, the planter includes a mounting bracket coupled to the mounting port, the mounting bracket including a post configured to engage the mounting port and one or more coupling elements configured to secure a conduit. Additionally, or alternatively, the planter may include the conduit coupled to and longitudinally extending along the longitudinal body, the conduit having outlets spaced along its length, the conduit optionally including one or more grooves configured to engage a portion of the longitudinally body or a portion of the one or more coupling elements.

15 [0006] In some implementations, the longitudinal body further defining an overflow conduit having an inlet associated with the first plant holder and an outlet posited below the inlet. Additionally, or alternatively, each plant holder includes an inlet opening and an outlet opening, which is in flow communication with its corresponding liquid channel; and a ridge is positioned adjacent to the inlet opening, the ridge extending at least partially along a length of the inlet opening.

20 [0007] According to one aspect of the disclosure there is provided a planter which includes a longitudinal body defining at least two longitudinally extending liquid channels, the longitudinal body including one or more mounting ports configured to receive a mounting bracket configured to enable coupling of a conduit to be coupled to the longitudinal body via the mounting bracket; and at least two plant holders defined in the body, the plant holders spaced on the outer circumference of the longitudinal body, each one of the at least two plant holders in fluid flow communication with one of the at least two longitudinally extending liquid channels; the mounting bracket coupled to a mounting port of the one or more mounting ports, the mounting bracket including a post configured to engage mounting port of the one or more mounting ports and a coupling element configured to secure the conduit in a coupled state with the mounting bracket; and the conduit is coupled to the mounting bracket and includes at least one longitudinally extending gas channel, the gas channel having gas outlets spaced along its length, in which the gas outlets in the form of nozzles open to the outside of the longitudinal body of the planter, and in which the gas channel is coupled to the one or more mounting ports via the mounting bracket.

[0008] The longitudinal body may include a single longitudinal conduit which is internally divided to define the at least two longitudinally extending liquid channels.

[0009] Each planter holder may define a holder mouth into which plants are receivable. In particular the holder mouth may be shaped as an applanated cylindrical ellipse, -circle or the
5 like.

[0010] In one embodiment, the at least two plant holders may be located on opposed sides of the longitudinal body. In particular, the at least two plant holders may be alternatively spaced on opposed sides over the length of the longitudinal body.

CLAIMS

1. A planter comprising:

a longitudinal body defining at least two longitudinally extending liquid channels, the longitudinal body including one or more mounting ports configured to receive a mounting bracket configured to enable coupling of a conduit to be coupled to the longitudinal body via the mounting bracket; and

at least two plant holders defined in the body, the plant holders spaced on the outer circumference of the longitudinal body, each one of the at least two plant holders in fluid flow communication with one of the at least two longitudinally extending liquid channels;

the mounting bracket coupled to a mounting port of the one or more mounting ports, the mounting bracket including a post configured to engage mounting port of the one or more mounting ports and a coupling element configured to secure the conduit in a coupled state with the mounting bracket; and

the conduit is coupled to the mounting bracket and includes at least one longitudinally extending gas channel, the gas channel having gas outlets spaced along its length, in which the gas outlets in the form of nozzles open to the outside of the longitudinal body of the planter, and in which the gas channel is coupled to the one or more mounting ports via the mounting bracket.

2. The planter as claimed in claim 1, in which each plant holder defines a holder mouth into which a plant is receivable.

3. The planter as claimed in claim 1, in which each plant holder includes an inlet opening and an outlet opening, which is in flow communication with its corresponding liquid channel, and in which the inlet opening is located above the outlet opening to permit gravitational liquid flow into the plant holder through the inlet opening and liquid flow from the plant holder through the outlet opening.

~~4. The planter as claimed in claim 1, in which the planter includes at least one longitudinally extending gas channel, the gas channel having gas outlets spaced along its length, in which the gas outlets in the form of nozzles open to the outside of the planter body, and in which the gas channel is coupled to the mounting ports.~~

~~54.~~ The planter as claimed in claim 1, in which the planter includes an external attachment formation associated with each plant holder for attaching a plant support, and in which the attachment formation is located below the plant holder mouth.

~~65.~~ The planter as claimed in claim 1, which includes planting inserts shaped and dimensioned to fit into mouths of the at least two plant holders and in which the planting inserts are selected from any one or more of: a seedling tray, a planting tray and a seeding clip.

~~76.~~ The planter as claimed in claim ~~65~~, in which the planting tray is in the form of a cylindrical body shaped to the shape of the plant holder and includes an inlet opening indexed with the inlet opening of the plant holder, the planting tray includes a planar base cut in sections to provide drainage slits to permit liquid drainage without flushing seedlings from the seedling tray.

~~87.~~ The planter as claimed in claim ~~76~~, in which a portion of the planting tray sidewall also includes drainage slits, in which a portion of the sidewall is slightly tapered towards the base, or both.

~~98.~~ A planter tower comprising:

a plurality of planters as claimed in claim 1, connected together to form an elongate upright planter with plant holders extending from the sides of the planter tower.

~~10.—The planter tower as claimed in claim 9, in which the plant holders are alternatively spaced on opposed sides over the length of the longitudinal bodies being connected together.~~

~~119.~~ The planter tower as claimed in claim ~~98~~, which includes at least one end member, shaped and dimensioned to connect onto an end of the plurality of planters connected together, and in which the planter tower includes two end members, a top end member for connecting to the top end of the plurality of planters and a bottom end member for connecting to the bottom end of the plurality of planters.

~~1210.~~ The planter tower as claimed in claim ~~119~~, in which the at least one end member includes a catchment tray, for receiving any overflow liquid.

~~1311.~~ The planter tower as claimed in claim ~~98~~, in which each planter includes a gas channel, the gas channel extends over the length of the interconnected planters.

~~14~~12. A hydroponic greenhouse comprising:

an array of planter towers as claimed in claim ~~98~~, the planter towers arranged in parallel spaced rows, the rows being provided with a top liquid supply line, connected via an intake closure to a top of each of the planter towers, the rows further being provided with a bottom liquid collection line, connected via an outlet closure to a bottom of each of the planter towers; and

a liquid circulation system, connected to the liquid supply lines and the liquid collection lines.

~~15~~13. The hydroponic greenhouse as claimed in claim ~~14~~12, further comprising the rows of the planter towers being provided with a top gas supply line connected via the intake closure to the top of each of the planter towers and provided with a bottom gas collection line connected via the outlet closure to the bottom of each of the planter towers.

~~16~~14. The hydroponic greenhouse as claimed in claim ~~15~~13, further comprising a gas circulation system, the gas circulation system connected to the gas supply lines and the gas collection lines.

~~17~~15. The planter as claimed in claim 1, in which:

a seedling tray is shaped based on the shape of the plant holder and includes an inlet opening indexed with the inlet opening of the plant holder, the seedling tray includes drainage slits to permit liquid drainage without flushing seedlings from the seedling tray.

~~18. The planter as claimed in claim 6, in which a particular planting insert of the planting inserts includes:~~

~~multiple fins, a planar bottom coupled to at least one fin, a slit positioned between two fins of the multiple fins, or a combination thereof.~~

~~19. The planter as claimed in claim 18, in which a particular planting insert of the planting inserts includes:~~

~~a seed holder positioned in the seedling tray, and~~

~~a channel positioned between the planar bottom and an end of at least one fin.~~

~~20. The planter of claim 1, further comprising:~~

~~a mounting bracket coupled to at least one of the one or more mounting ports, the mounting bracket including a post configured to engage the one or more mounting ports and one or more coupling elements configured to secure a conduit; and/or~~

~~the conduit coupled to and longitudinally extending along the longitudinal body, the conduit having outlets spaced along its length, the conduit optionally including one or more grooves configured to engage a portion of the longitudinally body or a portion of the one or more coupling elements.~~

16. The planter as claimed in claim 1, in which:

the mounting bracket includes a base,

the post extends from a first side of the base in a first direction,

the coupling element includes one or more coupling arms that extend from a second side of the base in a second direction that is opposite the first direction, and

the one or more coupling arms define an opening configured to receive the conduit.

17. The planter as claimed in claim 1, in which:

the planter includes one or more planting inserts shaped and dimensioned to fit into mouths of the at least two plant holders,

the one or more planting inserts are selected from a group of planting inserts including: a seedling tray, a planting tray and a seeding clip, and

a first planting insert of the one or more planting inserts includes:

multiple fins, a planar bottom coupled to at least one fin, a slit positioned between two fins of the multiple fins, or a combination thereof; or

a second planting insert of the one or more planting inserts includes:

a seed holder positioned in the seedling tray, and

a channel positioned between the planar bottom and an end of at least one fin.

18. The planter as claimed in claim 1, in which:

the one or more mounting ports include multiple mounting ports on a first side of the planter, the multiple mounting ports include:

a first set of mounting ports; and

a second set of mounting ports; and

when the mounting port and the conduit are coupled to the longitudinal body via the one or more mounting ports, the conduit is positioned between the first set of mounting ports and the second set of mounting port.

19. The planter as claimed in claim 18, in which:

the longitudinal body includes a divider configured to divide at least a portion of a longitudinal conduit of the longitudinal body into the at least two longitudinally extending liquid channels;

20. The planter as claimed in claim 18, in which:

the first set of mounting ports on the first side of the planter are vertically aligned and positioned on a first side of the divider,

the second set of mounting ports the first side of the planter are vertically aligned and positioned on a second side of the divider,

a first set of plant holders of the at least two plant holders are positioned on the first side of the divider, and

a second set of plant holders of the at least two plant holders are positioned on the second side of the divider.