environment. The one or more than one floats may in particular be according to any of the embodiments of the float and/or tray assembly disclosed herein.

The objective of the present invention is furthermore achieved with a horticultural system, comprising one or more than one tray or tray assembly according to any one of the hereabove embodiments and a watering device configured to introduce water into the water inlet section of the tray.

According to a further embodiment of the horticultural system, a water outlet of the watering system comprises a faucet aerator configured to aerate a water stream of the water outlet. This advantageously enables aeration of water introduced into the reservoir of the tray, which is otherwise shielded from the external environment. Separate aeration devices may be omitted.

The objective of the present invention is furthermore achieved with a horticultural method comprising usage of a tray, a tray assembly or a horticultural system according to any of the embodiments disclosed herein.

The present disclosure also provides a favorable combination of some of the above features related to the supports and the lifting mechanism in alternative embodiments of the tray, the one or more than one float and a tray assembly thereof. The following tray, float and lifting mechanism present a plurality of interrelated products adapted for each other.

A tray is provided for a tray assembly for cultivating horticultural crops. This tray comprises:

- a reservoir configured to contain water and to receive one or more than one float in the reservoir to substantially shield water contained in the reservoir from the external environment, wherein the one or more than one float is configured to receive one or more than one plant and to be arranged in the reservoir and substantially shield water contained in the reservoir from the external environment, the float comprising one or more than one accommodation configured to receive one or more than one plant and one or more than one recess arranged at a bottom surface of the float, wherein a first two-dimensional pattern defined by the one or more than one recess differs from a second two-dimensional pattern defined by the one or more than one accommodation;
- a drain configured to drain water from the reservoir when a water level in the reservoir reaches a maximum water level; and
- one or more than one support protruding upward relative to a bottom of the reservoir and configured to support the one or more than one float when received in the reservoir, wherein a third two-dimensional pattern is defined by the one or more than one support and corresponds to the first two-dimensional pattern defined by the one or more than one recess of the float and the one or more than one support comprises a through hole arranged above the maximum water level of the reservoir.

The supports of the tray maintain the one or more than float elevated above the bottom of the tray even when the reservoir has been completely drained. This for example safeguard roots of plants accommodated in the floats. The through holes of the tray are favorably arranged above the maximum water level of the reservoir, as determined by the drain, the prevent draining of the reservoir via the through holes in the supports. The through holes enable access to the bottom of the floats, for example for extraction pins of a lifting mechanism to lift floats out of the tray.

frame. Alternatively, the lifting mechanism may be provided separately from the tray or tray assembly.

A lifting mechanism is provided which is adapted for a tray assembly according to any of the embodiments disclosed herein. The lifting mechanism comprises one or more than one extraction pin that is configured to be aligned with the through hole of the one or more than one support of the tray of the tray assembly. A fourth two-dimensional pattern defined by the one or more than one extraction pin of the lifting mechanism corresponds to the third two-dimensional pattern defined by the one or more than one support of the tray and/or the first two-dimensional pattern defined by the one or more than one recess of the float of the tray assembly, the first two-dimensional pattern differing from the second two-dimensional pattern defined by the one or more than one accommodation of the float. The lifting mechanism is configured to move the one or more than one extraction pin through the through hole of the one or more than one support, to abut one or more than one float arranged or arrangeable in the reservoir of the tray and to lift the one or more than one float out of the tray. The float is preferably abutted by the extraction pins at the bottom surface of float, more preferably a recess arranged in the bottom surface of the float.

The supports of the tray and the recesses of the floats provide alignment means for the extraction pins of the lifting mechanism.

A horticultural system is provided comprising a tray assembly according to any of the above embodiments and a lifting mechanism according to any of the above embodiments. The lifting mechanism may thus be comprised by a frame of the tray or tray assembly but may also be provided as a separate device of the system. The through hole of the one or more than one support of the tray, the one or more than one recess of the optional float and the one or more than one extraction pin of the lifting mechanism are aligned or configured to be aligned for lifting the float out of the tray.

Finally, a horticultural method is provided which comprises usage of a tray, a float, a tray assembly, a lifting mechanism and/or a horticultural system according to any of the embodiments discloses herein. The method may in particular comprise lifting or lowering one or more than one float relative to the tray via a bottom surface of the one or more than one float.

The present invention will now be elucidated with reference to the drawing, in which:

- Fig. 1 depicts a perspective view of a tray assembly according to a first embodiment;
- Fig. 2 depicts a cross-sectional view of the tray assembly of Fig. 1;
- Fig. 3 depicts a cross-sectional close-up of a water inlet section of the tray assembly of Fig. 2;
- Fig. 4 depicts a cross-sectional close-up of a drain section of the tray assembly of Fig. 2;
- Fig. 5 and Fig. 6 depict cutaway side views of the tray assembly of Fig. 1 with and without floats, respectively;
- Fig. 7 depicts a perspective view of a composition of the tray assembly of Fig. 1;

- Fig. 8 and Fig. 9 depict cutaway side views of a drain section of the tray assembly of Fig. 1 with and without floats, respectively;
- Fig. 10 depicts a further perspective view of a composition of the tray assembly of Fig. 1;
- Fig. 11 depicts a perspective view of a tray assembly according to a second embodiment;
- Fig. 12 depicts a cross-sectional view of the tray assembly of Fig. 11;

CLAIMS

1. Tray for a tray assembly for cultivating horticultural crops, the tray comprising:

- a reservoir configured to contain water and to receive one or more than one float in the reservoir to substantially shield water contained in the reservoir from the external environment, wherein the one or more than one float is configured to receive one or more than one plant and to be arranged in the reservoir and substantially shield water contained in the reservoir from the external environment, the float comprising one or more than one accommodation configured to receive one or more than one plant and one or more than one recess arranged at a bottom surface of the float, wherein a first two-dimensional pattern defined by the one or more than one recess differs from a second two-dimensional pattern defined by the one or more than one accommodation;

- a drain configured to drain water from the reservoir when a water level in the reservoir reaches a maximum water level; and

- one or more than one support protruding upward relative to a bottom of the reservoir and configured to support the one or more than one float when received in the reservoir, wherein a third two-dimensional pattern is defined by the one or more than one support and corresponds to the first two-dimensional pattern defined by the one or more than one recess of the float and the one or more than one support comprises a through hole arranged above the maximum water level of the reservoir.

2. Tray of claim 1, wherein the through hole is arranged at a top surface of the one or more than one support.

3. Tray of claim 1 or 2, further comprising a water inlet section that is arranged adjacent the reservoir and comprises a water flow guide, wherein the water flow guide at least one of:

- defines a downward sloping guide surface configured to guide water received on the water flow guide into the reservoir under a level at which the one or more than one float is arrangeable in the reservoir; and

- comprises a throughflow opening configured to guide water into a chamber of the water inlet section that is in fluid connection with the reservoir.

4. Float for a tray assembly for cultivating horticultural crops, wherein the float is configured to be arranged in the reservoir of a tray according to any of the claims 1-3 to substantially shield water contained in the reservoir from the external environment when the float is arranged in the reservoir and comprises:

- one or more than one accommodation configured to receive one or more than one plant; and

- one or more than one recess arranged at a bottom surface of the float and configured to receive the one or more than one support of the tray,

wherein a first two-dimensional pattern defined by the one or more than one recess differs from a second two-dimensional pattern defined by the one or more than one accommodation and corresponds to the third two-dimensional pattern defined by the one or more than one support of the tray.

5. Float according to claim 4, wherein the one or more than one recess is formed as a blind hole extending into the float from the bottom surface of the float.

6. Float according to claim 4 or 5, wherein the one or more than one accommodation is formed as a through hole extending from the bottom surface of the float to a top surface of the float.

7. Float according to any of the claims 4-6, wherein a cross-section of the one or more than one recess is larger than a cross-section of the one or more than one accommodation.

8. Float according to any of the claims 4-7, wherein the one or more than one recess is circular.

9. Float according to any of the claims 4-8, wherein the float is hollow.

10. Tray assembly for cultivating horticultural crops comprising:

- a tray according to any of the claims 1-3; and

- one or more than one float according to any of the claims 4-9.

11. Tray assembly according to claim 10, wherein the one or more than one recess of the float is recessed from the bottom surface of the float over a distance smaller than a height of the one or more than one support of the tray.

12 Tray assembly according to claim 10 or 11, wherein a cross-section of the one or more than one support, in particular measured at its top, of the tray is larger than a cross-section of the one or more than one accommodation of the float, in particular measured at the bottom surface of the float.

13. Tray assembly according to any of the claims 10-12, further comprising:

- a lifting mechanism comprising one or more than one extraction pin that is aligned, or configured to be aligned, with the through hole of the one or more than one support, wherein the lifting mechanism is configured to move the one or more than one extraction pin through the through hole of the one or more than one support and to abut one or more than one float arrangeable or arranged in the reservoir of the tray, in particular the one or more than one recess thereof, and thereby lift the one or more than one float out of the tray.

14. Tray assembly according to claim 13, wherein a fourth two-dimensional pattern defined by the one or more than one extraction pin of the lifting mechanism corresponds to at least one of the third two-dimensional pattern defined by the one or more than one support of the tray and the first two-dimensional pattern defined by the one or more than one recess of the float.

15. Tray assembly according to claim 13 or 14, wherein the lifting mechanism is comprised by a frame configured to support at least the tray.

16. Lifting mechanism for a tray assembly according to any of the claims 10-15, wherein the lifting mechanism comprises one or more than one extraction pin that is aligned, or configured to be aligned, with the through hole of the one or more than one support of the tray of the tray assembly, wherein a fourth two-dimensional pattern defined by the one or more than one extraction pin of the lifting mechanism corresponds to the third two-dimensional pattern defined by the one or more than one support of the tray and/or the first two-dimensional pattern defined by the one or more than one recess of the float of the tray assembly, the first two-dimensional pattern differing from the second two-dimensional pattern defined by the one or more than one accommodation of the float, and the lifting mechanism is configured to move the one or more than one extraction pin through the through hole of the one or more than one support, to abut one or more than one float arranged or arrangeable in the reservoir of the tray and to lift the one or more than one float out of the tray.

17. Horticultural system comprising:

- a tray assembly according to any of the claims 10-15; and
- a lifting mechanism according to claim 16,

wherein the through hole of the one or more than one support of the tray, the one or more than one recess of the optional float and the one or more than one extraction pin of the lifting mechanism are aligned or configured to be aligned for lifting the float out of the tray.

18. Horticultural method comprising usage of a tray according to any of the claims 1-3, a float according to any of the claims 4-9, a tray assembly according to any of the claims 10-15, a lifting mechanism according to claim 16 or a horticultural system according to claim 17.

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19. Horticultural method of claim 18, comprising lifting or lowering one or more than one float relative to the tray via a bottom surface of the one or more than one float using one or more than one extraction pin of a lifting mechanism.