

Claims

What is claimed is:

1. A planting device, comprising: a planting tray and a planting board, characterized in that the planting tray comprises a bottom plate and a sidewall; the planting tray comprises a nutrient solution inflow and outflow area and a planting area; the planting board is placed on the planting area;

the nutrient solution inflow and outflow area comprises a nutrient solution inflow area and a nutrient solution outflow area; the nutrient solution inflow area and the nutrient solution outflow area are located on a same side of the planting tray; the sidewall of the same side of the planting tray serves as a sidewall of the nutrient solution inflow and outflow area; the nutrient solution inflow area and the nutrient solution outflow area are separated by a partition member connected to the sidewall of the nutrient solution inflow and outflow area;

a nutrient solution inlet is provided on a top of the planting tray at the nutrient solution inflow and outflow area, and a nutrient solution outlet is provided on the bottom plate of the planting tray at the nutrient solution outflow area;

a middle partition plate is provided inside the planting tray; the middle partition plate is connected to the partition member, and the middle partition plate extends along a direction perpendicular to the sidewall of the nutrient solution inflow and outflow area within the planting area; and a gap is provided between the middle partition plate and the sidewall of the planting tray on an opposite side of the sidewall of the nutrient solution inflow and outflow area,

wherein a plurality of liquid blocking ribs parallel to the sidewall of the nutrient solution inflow and outflow area are provided on the bottom plate of the planting tray and the planting area to divide the planting area into a plurality of liquid storage areas.

2. The planting device according to claim 1, characterized in that

a side partition plate is provided inside the planting tray; the side partition plate is arranged in parallel to the sidewall of the nutrient solution inflow and outflow area, and the side partition plate separates the nutrient solution inflow and outflow area from the planting area;

a liquid inflow buffer tank is defined by the partition member, the sidewall of the nutrient solution inflow and outflow area, and the side partition plate located in the nutrient solution inflow area; the side partition plate located in the nutrient solution inflow area is provided with a nutrient solution inflow port; and

the side partition plate located in the nutrient solution outflow area is provided with a nutrient solution outflow port.

3. The planting device according to claim 1 or 2, characterized in that

the planting tray is provided with a liquid receiving tank; the liquid receiving tank comprises a bottom plate, two sidewalls opposite to each other, and an end wall; an end of the end wall opposite to the liquid receiving tank is an open end; the liquid receiving tank is fixed at the nutrient solution inlet of the planting tray; and the open end faces toward the nutrient solution inflow area.

4. The planting device according to claim 2, characterized in that

a filter is provided at the nutrient solution outflow port; the filter comprises a full-filtration screen and a semi-filtration screen; the full-filtration screen and the semi-filtration screen each comprise a laterally placed rectangular base plate and a filter mesh installed in an opening of the base plate; two base plates of the full-filtration screen and the semi-filtration screen are parallel to each other and identical in height; the two base plates are fixed together with a space; and a height of the filter mesh of the semi-filtration screen is less than a height of the filter mesh of the full-filtration screen.

5. The planting device according to claim 4, characterized in that

two ends of the filter are respectively embedded in the side partition plates at two sides of the nutrient solution outflow port in a snap-fit manner.

6. A multilayer stereo-planting system, comprising a support rack, and a nutrient solution supply system installed on the support rack, characterized in that

the multilayer stereo-planting system further comprises the planting device according to any one of claims 1-5; the planting device is installed on the support rack and can be disassembled as a whole;

the nutrient solution supply system comprises a main nutrient solution pipeline installed on a top of the support rack, funnel-type flow guiding devices, and a liquid discharging pipe installed on a bottom of the support rack; the funnel-type flow guiding devices are installed on each layer of the support rack, and the funnel-type flow guiding devices are located above the nutrient solution inlet of the planting device; and the funnel-type flow guiding devices are arranged as one line or multiple lines along a vertical center line from top to bottom.

7. The multilayer stereo-planting system according to claim 6, characterized in that the multilayer stereo-planting system comprises a ventilation and heat dissipation system; the ventilation and the heat dissipation system comprises a main cool air pipeline, a main CO₂ pipeline, a branch cool air pipeline, and a branch CO₂ pipeline, wherein the main cool air pipeline and the main CO₂ pipeline are installed at the top of the support rack, the branch cool air pipeline and the branch CO₂ pipeline respectively extend downward from the main cool air pipeline and the main CO₂ pipeline; and the branch cool air pipeline and the branch CO₂ pipeline are each provided with a plurality of air outlets at each layer of the support rack.

8. The multilayer stereo-planting system according to claim 6, characterized in that the multilayer stereo-planting system further comprises light source modules installed on each layer of the support rack.

9. A planting system of a plant factory, comprising the multilayer stereo-planting system according to any one of claims 6-8.