CLAIMS

[Claim 1] A mechanised crop farming system comprising:

a frame having a plurality of levels stacked in a vertical direction;

a closed loop conveyor traversing the levels and having alternating lateral and non-lateral conveyor paths, and a return conveyor path, wherein a plurality of the lateral conveyor paths are longer than at least some of the non-lateral conveyor paths;

a plurality of crop holders removably coupled to the conveyor at intervals thereof;

a fluid reservoir having a fluid;

a drive unit operably coupled to the conveyor and operable to cause transportation of the crop holders, in any of two directions along the conveyor, to a first subset of the lateral conveyor paths wherein the crop holders arranged along the first subset are within an operational reach of the fluid reservoir, and wherein the drive unit is further operable to cause transportation of the crop holders, in any of the two directions along the conveyor, to a second subset of the lateral conveyor paths wherein the crop holders arranged along the second subset are outside the operational reach of the fluid reservoir,

wherein the second subset of the lateral conveyor paths is arranged above the first subset of the lateral conveyor paths which is arranged above the fluid reservoir to collectively provide a vertically stacked arrangement such that the fluid reservoir is configured to irrigate the crop holders within the operational reach of the fluid reservoir with the fluid, and collect the fluid which is drained and fallen from the crop holders outside the operational reach of the fluid reservoir.

[Claim 2] The system according to claim 1, wherein the drive unit is further operable to cause transportation, in any of the two directions along the conveyor, of each of the crop holders which are arranged along the second subset to be intermittently repositioned among a plurality of distinct positions along at least one lateral direction defined by the second subset.

[Claim 3] The system according to claim 1 or claim 2, wherein each of the crop holders includes at least one flood opening configured to receive the fluid therethrough when the crop holders are within the operational reach of the fluid reservoir, and wherein

each of the crop holders includes at least one drainage opening configured to at least partially drain the fluid therefrom.

[Claim 4] The system according to claim 3, wherein the drive unit is further operable to cause transportation of the crop holders along the first subset to cause a movement of the crop holders through the fluid reservoir and a circulation of the fluid through the at least one flood opening and the at least one drainage opening.

[Claim 5] The system according to claim 4, wherein each of the crop holders includes a pair of opposed first sidewalls, a pair of opposed second sidewalls which are shorter than the first sidewalls, and a bottom wall coupled to the first sidewalls and the second sidewalls, wherein the at least one drainage opening is arranged on at least one of the second sidewalls at a distance from the bottom wall to cause retention of at least some of the fluid in each of the crop holders.

[Claim 6] The system according to claim 1 or claim 2, wherein the fluid reservoir includes at least one fluid release opening configured to release the fluid into the crop holders which are within the operational reach of the fluid reservoir.

[Claim 7] The system according to any one of claim 1 to claim 6, wherein the drive unit is further operable to cause transportation, in any of the two directions along the conveyor, of the crop holders to a load and/or unload station arranged along the conveyor wherein the crop holders arranged at the load and/or unload station are within an operational reach for coupling to the conveyor or decoupling from the conveyor.

[Claim 8] The system according to any one of claim 1 to claim 7, wherein at least some of the crop holders are replaceable by a plurality of second crop holders, wherein the at least some of the crop holders and the second crop holders are respectively configured for at least two different growing methods selected from the list consisting of soil-based farming, hydroponics and aquaponics.

[Claim 9] The system according to any one of claim 1 to claim 8, wherein the conveyor is non-helical.

[Claim 10] A method for mechanised crop farming, the method comprising:

removably coupling a plurality of crop holders to a closed loop conveyor at intervals thereof, the conveyor having alternating lateral and non-lateral conveyor paths, and a return conveyor path, wherein a plurality of the lateral conveyor paths are longer than at least some of the non-lateral conveyor paths, wherein the conveyor traverses a plurality of layers of a frame which are stacked in a vertical direction;

transporting the crop holders, in any of two directions along the conveyor, to a first subset of the lateral conveyor paths, thereby arranging the crop holders within an operational reach of a fluid reservoir having a fluid;

irrigating, by the fluid reservoir, the crop holders within the operational reach of a fluid reservoir with the fluid from the fluid reservoir;

transporting the crop holders, in any of two directions along the conveyor, to a second subset of the lateral conveyor paths, thereby arranging the crop holders outside the operational reach of the fluid reservoir; and

collecting, by the fluid reservoir, the fluid drained and fallen from the crop holders outside the operational reach of the fluid reservoir.

[Claim 11] The method according to claim 10, further comprising:

intermittently repositioning each of the crop holders, which are arranged at the second subset, among a plurality of distinct positions along at least one lateral direction defined by the second subset, wherein intermittently repositioning each of the crop holders includes transporting the crop holders in any of the two directions along the conveyor.

[Claim 12] The method according to claim 10 or claim 11, wherein irrigating, by the fluid reservoir, the crop holders within the operational reach of the fluid reservoir with the fluid from the fluid reservoir, includes: irrigating the fluid through at least one flood opening of each of the crop holders, wherein the method further comprising: at least partially draining the fluid through at least one drainage opening of each of the crop holders.

[Claim 13] The method according to claim 12, wherein irrigating, by the fluid reservoir, the crop holders within the operational reach of the fluid reservoir with the fluid from the fluid reservoir, includes:

transporting the crop holders along the first subset, the transporting including moving the crop holders through the fluid reservoir and causing the fluid to circulate through the at least one flood opening and the at least one drainage opening of each of the crop holders.

[Claim 14] The method according to claim 12 or claim 13, wherein each of the crop holders includes a pair of opposed first sidewalls, a pair of opposed second sidewalls which are shorter than the first sidewalls, and a bottom wall coupled to the first sidewalls and the second sidewalls, wherein the at least one drainage opening is arranged on at least one of the second sidewalls at a distance from the bottom wall to cause retention of at least some of the fluid in each of the crop holders.

[Claim 15] The method according to claim 10 or claim 11, wherein irrigating, by the fluid reservoir, the crop holders within the operational reach of the fluid reservoir with the fluid from the fluid reservoir, includes:

releasing the fluid, through at least one fluid release opening of the fluid reservoir, into the crop holders which are within the operational reach of the fluid reservoir.

[Claim 16] The method according to any one of claim 10 to claim 15, further comprising:

transporting the crop holders to a load and/or unload station arranged along the conveyor; and decoupling the crop holders from the conveyor,

wherein transporting the crop holders to the load and/or unload station arranged along the conveyor includes transporting the crop holders in any of the two directions along the conveyor.

[Claim 17] The method according to any one of claim 10 to 16, further comprising:

interchanging at least some of the crop holders with a plurality of second crop holders, wherein the at least some of the crop holders and the second crop holders are respectively configured for at least two different growing methods selected from the list consisting of soil-based farming, hydroponics and aquaponics.

[Claim 18] The method according to any one of claim 10 to 17, wherein the conveyor is non-helical.