CLAIMS

1. A super-intensive aquaculture method for the growth and harvesting of two or more farmed organisms, the method comprising the steps of:

(i) providing an aquaculture system comprising:

one or more farming vessels, at least one of the one or more farming vessels comprising water and a first farmed organism;

one or more waste reduction vessels, which comprise:

(a) a first suspended solids reduction vessel comprising water and a second farmed organism that consumes at least part of a suspended solid waste generated by the first farmed organism;

(b) a second suspended solids reduction vessel comprising water and a third farmed organism that consumes at least part of a suspended solid waste generated by the first and/or second farmed organisms,; and

(c) a soluble waste reduction vessel comprising water and a fourth farmed organism that consumes soluble waste generated by one or more of the first to third farmed organisms; and

a pumping system suitable for transporting water in the one or more waste reduction vessels to the one or more farming vessels;

(ii) feeding the first farmed organism periodically;

(iii) periodically providing a volumetric portion of water in at least one of the one or more farming vessels and replacing it with an equal volumetric portion of water from the one or more waste reduction vessels *via* the pumping system, where the portion of water removed from the at least one of the one or more farming vessels is received by the first suspended solids reduction vessel;

(iv) repeating steps (ii) and (iii) until at least one farmed organism is ready for harvest;

(v) harvesting and replacing the at least one farmed organism ready for harvest; and

(vi) repeating steps (ii) to (v).

wherein:

the second suspended solids reduction vessel is downstream from the first suspended solids reduction vessel, such that it receives water from the first suspended solids reduction vessel when water from the one or more waste reduction vessels is provided to the at least one of the one or more farming vessels;

the soluble waste reduction vessel is downstream from the second suspended solids reduction vessel, such that it receives water from the second suspended solids reduction vessel when water from the one or more waste reduction vessels is provided to the at least one of the one or more farming vessels;

the first farmed organism is selected from one or more of the group consisting of fish and aquatic invertebrates;

the second farmed organism is selected from one or more of the group consisting of fish and aquatic invertebrates;

the third farmed organism comprises one or more aquatic invertebrates; and

the fourth farmed organism comprises one or more aquatic plants.

~~2. The method according to Claim 1, wherein the one or more waste reduction vessels further comprises a second suspended solids reduction vessel comprising water and a third farmed organism that consumes at least part of a suspended solid waste generated by the first and/or second farmed organisms, where the second suspended solids reduction vessel is downstream from the first suspended solids reduction vessel, such that it receives water from the first suspended solids reduction vessel when water from the one or more waste reduction vessels is provided to the at least one of the one or more farming vessels.~~

~~3. The method according to Claim 1 or Claim 2, wherein the one or more waste reduction vessels further comprises a soluble waste reduction vessel comprising water and a fourth farmed organism that consumes soluble waste generated by one or more of the first to third farmed organisms.~~

~~4. The method according to Claim 3, wherein:~~
~~(a) when dependent upon Claim 1 or 2, the soluble waste reduction vessel is downstream from the first suspended solids reduction vessel, such that it receives water from the first suspended solids reduction vessel when water from the one or more waste reduction vessels is provided to the at least one of the one or more farming vessels; or~~
~~(b) when dependent upon Claim 2, the soluble waste reduction vessel is downstream from the second suspended solids reduction vessel, such that it receives water from the second suspended solids reduction vessel when water from the one or more waste reduction vessels is provided to the at least one of the one or more farming vessels.~~

2~~5~~. The method according to ~~any one of the preceding claims~~Claim 1, wherein:
(a) the second farmed organism consumes suspended solids having a particle size of from about 200 µm to about 500 µm.

3. The method according to Claim 1 or 2,~~; and/or~~

~~(b)~~ wherein the third farmed organism consumes suspended solids having a particle size of less than about 100 µm.

~~6~~4. The method according to any one of the preceding claims, wherein~~:~~

~~(a)~~ the one or more farming vessels are located at an elevated position with respect to at least one of the one or more waste reduction vessels.

5. The method according to any one of the preceding claims, wherein~~; and~~ ~~/or~~

~~(b)~~ the aquaculture system comprises one or more valves that control the flow of water from each of the one or more farming vessels to the one or more waste reduction vessels.

~~7~~6. The method according to any one of the preceding claims, wherein:

(a) the one or more farming vessels are provided within a greenhouse; or

(b) the one or more farming vessels and the one or more waste reduction vessels are provided in a greenhouse; or

(c) the aquaculture system is provided within a greenhouse.

~~8~~7. The method according to any one of the preceding claims, wherein the first farmed organism comprises~~is selected from one or more of the group consisting of fish and aquatic invertebrates;~~

~~optionally wherein:~~

~~(i)~~ ~~the~~ a fish ~~is~~ selected from one or more of the group consisting of Tilapia, Milkfish, Grouper, Carp, Snakehead, Catla, Mullet, Rohu, Seabass, Seabream, Snapper, Perch, Pompano, and Rabbit fish.

8. The method according to any one of the preceding claims, wherein the first farmed organism comprises~~; and~~ ~~/or~~

~~(ii) the~~ an aquatic invertebrate ~~is~~ selected from one or more of the group consisting of Sea cucumbers, crustaceans and molluscs;

~~more~~ optionally wherein in part (ii):

(a) the crustacean is selected from one or more of the group consisting of Shrimp, Prawn, Crab, Lobster, and Crayfish; and/or

(b) the mollusc is selected from one or more of the group consisting of Oyster, Clam, Mussel, Scallop, Carpet shell, and Abalone.

9. The method according to any one of the preceding claims, wherein the first farmed organism comprises Shrimp and/or Prawn.

10. The method according to any one of the preceding claims, wherein ~~the second farmed organism is selected from one or more of the group consisting of fish and aquatic invertebrates,~~

~~optionally wherein~~ the second farmed organism comprises a fish, for example Tilapia.

11. The method according to any one of Claims 1 to 9 ~~10~~, wherein the second farmed organism comprises an aquatic invertebrate ~~is~~ selected from one or more of the group consisting of Sea cucumbers, and molluscs,

optionally wherein the mollusc is selected from one or more of the group consisting of Oyster, Clam, Mussel, Scallop, Carpet shell, and Abalone.

12. The method according to any one of the preceding claims~~Claim 2 or any one of Claims 3 to 11 as dependent upon Claim 2~~, wherein the third farmed organism comprises ~~one or more aquatic invertebrates,~~

~~optionally wherein the~~ one or more aquatic invertebrates ~~are~~ selected from one or more of the group consisting of Sea cucumbers, and molluscs,

~~more~~ optionally wherein the mollusc is selected from one or more of the group consisting of Oyster, Clam, Mussel, Scallop, Carpet shell, and Abalone.

13. The method according to any one of the preceding claims, wherein the third farmed organism comprises one or more molluscs,

optionally wherein the one or more molluscs comprises one or more of the group consisting of Oyster, Clam, Mussel, Scallop, Carpet shell, and Abalone.

14. The method according to any one of the preceding claims~~Claim 3, or according to any one Claims 4 to 13 as dependent on Claim 3~~, wherein the fourth farmed organism ~~is one or more aquatic plants,~~

~~optionally wherein the one or more aquatic plants~~ comprises one or more seaweeds (e.g. such as one or more seaweeds selected from the group consisting of Kelp, Kombu, Wakame, Sea grape, Nori, Dulse, Carrageen Moss, Arame, and Hijiki).

15. The method according to any one of the preceding claims~~Claim 3, or according to any one Claims 4 to 14 as dependent on Claim 3~~, wherein the first farmed organism is

shrimp and/or prawns, the second farmed organism is Tilapia, the third farmed organism is clams and the fourth farmed organism is one or more seaweeds.

16. The method according to any one of the preceding claims, wherein the aquaculture system further comprises one or more filters, optionally wherein the one or more filters are selected from the group consisting of mechanical filters (e.g. sand filters) and protein skimmers.

17. The method according to any one of the preceding claims, wherein the method is a zero-water exchange method.

18. The method according to any one of the preceding claims, wherein at least one of the one or more farming vessels further comprises a plankton colony, and a bacteria colony;

optionally wherein:

(i) the plankton comprises one or more phytoplankton and one or more zooplankton, for example wherein the one or more zooplankton comprise one or more copepods and/or one or more ~~rotifiers~~rotifers; and/or

(ii) the bacteria comprises one or more autotrophic bacteria and/or one or more heterotrophic bacteria, for example wherein:

(a) the heterotrophic bacteria comprise *Bacillus spp.* and/or *Lactobacillus spp*; and/or

(b) the autotrophic bacteria comprise *Nitrosomonas* and/or *Nitrobacter spp*.

19. The method according to Claim 18, wherein:

(aa) the ratio of plankton:bacteria in one of the one or more farming vessels is greater than 1 when a first farmed organism is introduced to the farming vessel; and

(ab) the ratio of plankton:bacteria in the one of the one or more farming vessels in (aa) reduces as the method proceeds through steps (ii) to (iv) until the at least one first farmed organism in said one of the one or more farming vessels is harvested.

20. The method according to any one of the preceding claims, wherein after step (iv) the density of the at least one farmed organism in at least one of the one or more farming vessels is:

(a) from 40 to 140 kg/m^3, where the one farmed organism in at least one of the one or more farming vessels comprises a fish; or

(b) from 20 to 25 kg/m^2, one farmed organism in at least one of the one or more farming vessels comprises Shrimp and/or Prawn.