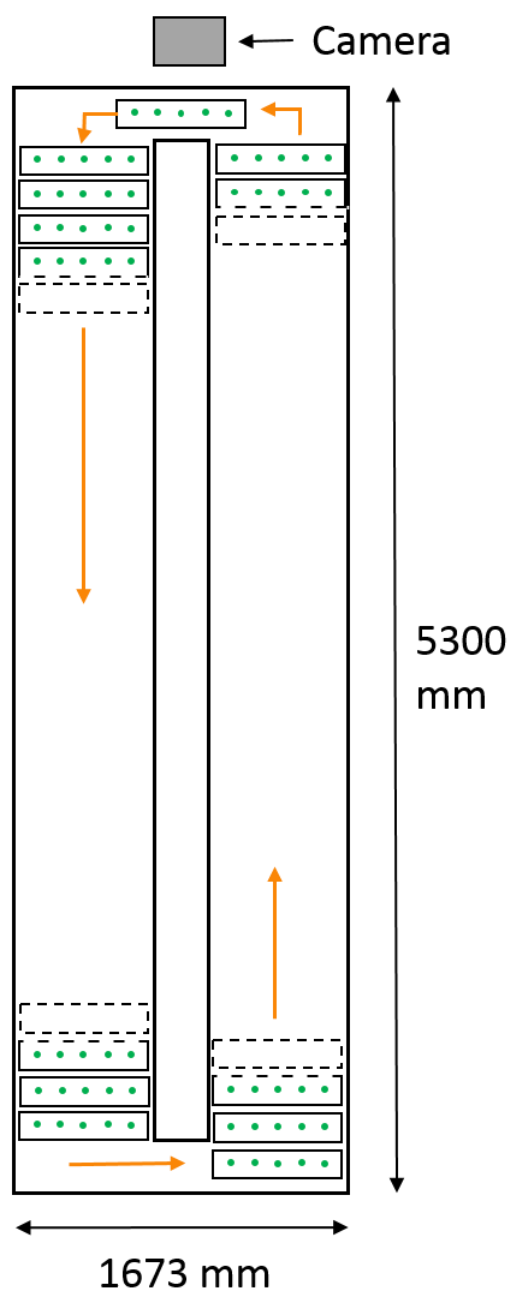


## Platform name

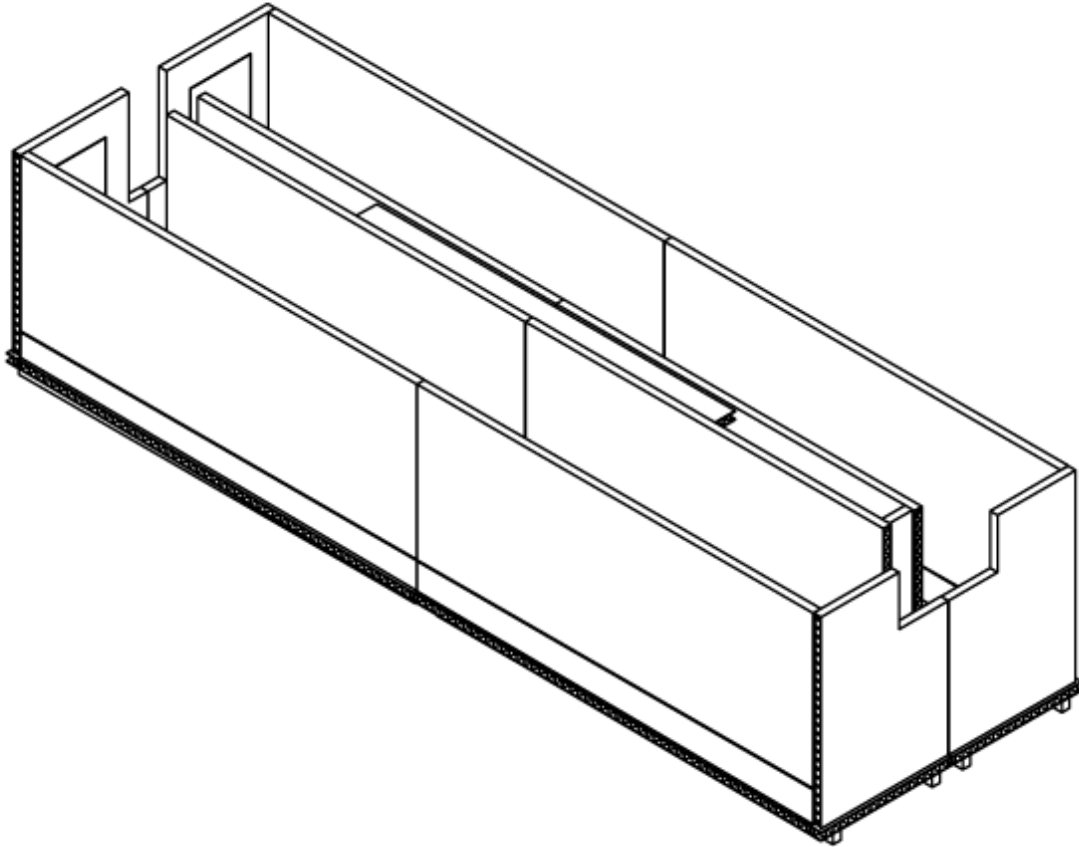
|                       |  |
|-----------------------|--|
| Partner site          | UCL  |
| Site and installation | Site: Louvain-la-Neuve, Installation: Aeroponics |
| Contact person(s)     | Xavier Draye xavier.draye@uclouvain.be           |

## Description of the platform structure

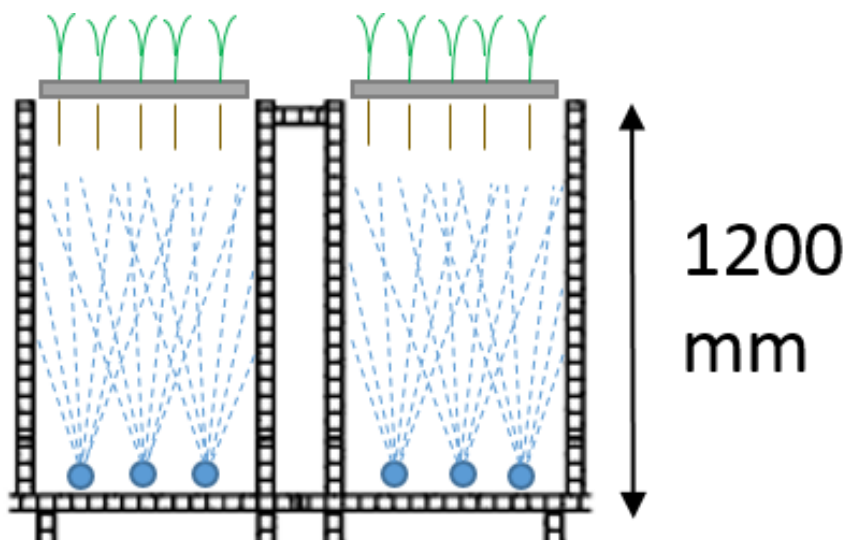


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Aeroponic tank: plants are hold on strips, 5 plants per strip (green dots on layout). There are 99 strips in the tank for a total of 495 plants/tank. Strips move in the direction indicated by orange arrows. A full revolution takes 2 hours. When strips pass in front of the camera, at the top of the layout, plants are imaged individually.



3D view of one tank, without the strips.

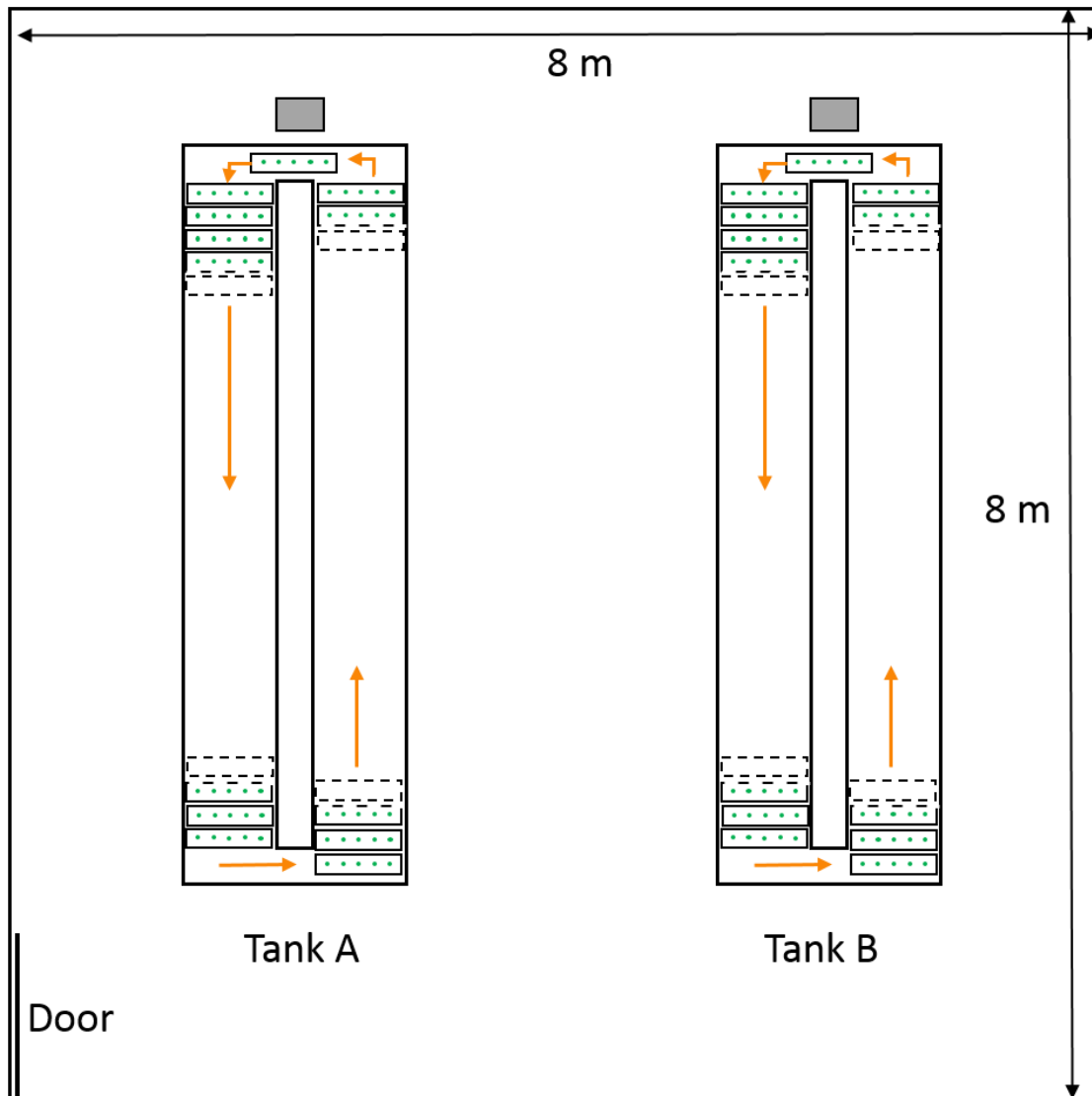


Transversal view of the aeroponic tank: 3 sprinklers are placed regularly in the bottom of each side of the tank. The sprinklers spray nutrient solution at regular interval, set by the operator. The spraying

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pattern (interval and duration) can be differentiated between day and night and can be modified at any moment of the experiment.

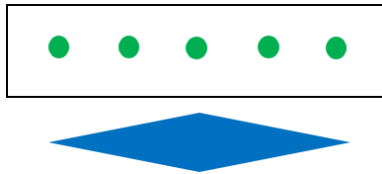
2 identical tanks are available in the installation, located next to each other in the same greenhouse.



### Sources and directions (if known) of environmental variations in the installation

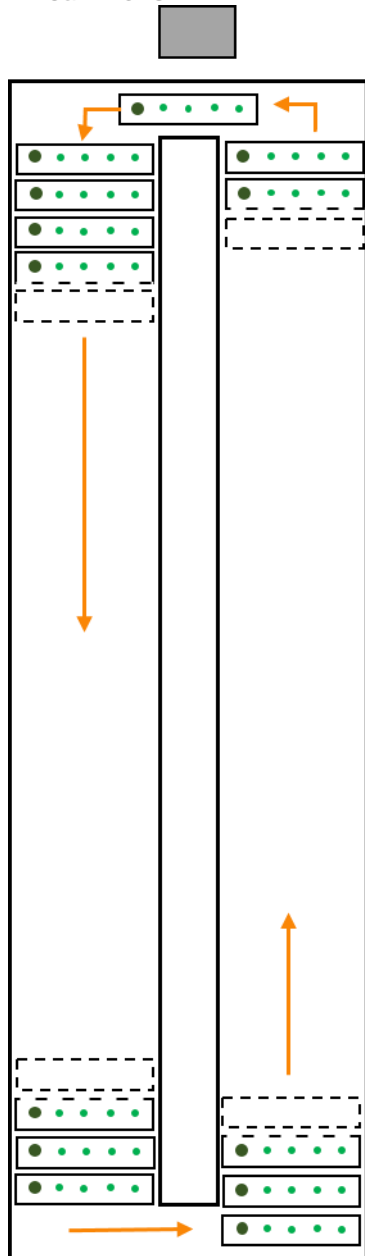
- 1) Between the 2 tanks.
- 2) The side of the tank placed along the greenhouse wall may be warmer than the side near the centre of the greenhouse because of the presence of heating pipes along the walls.

- 3) Inside each tank, between plants that grow in the middle of the strip as compared to plants growing at the border of the strip. We suppose that the plants at the extremity of the strip may receive a bit less water than the others.



Layout of a strip with supposed variation of water availability: more water in the middle and less in the border

- 4) Last year, we observed that the plants growing on the left side of the strips were growing faster than the ones growing on the right side. We understood that the lamps were not exactly centred in the middle of the tank. We moved the lamps to put them exactly at the centre of each tank but we haven't done any new experiment yet.



Layout representing the plants that grow faster on the left side of the strips. The plants keep moving inside the tank but the left/right distinction is maintained during the whole experiment.

As strips keep moving within each tank, we don't expect to observe environmental variation between the different strips of each tank.

**Description of experimental design and randomization and a motivation for the design and the randomization**

- Design

Completely randomized design: individual plants are located in a strip and at a position randomly with Excel.

+ 2 treatments (eg: shadow, change of nutrient solution properties...) corresponding to the 2 tanks  
OR 2 blocks corresponding to the 2 tanks

- Design specifications
- Motivation

### How plant positions are defined and recorded in the experiment

How are the pot positions defined according to the design, i.e. how are the spatial coordinates defined (see example 6)?

QR code associated to each plant



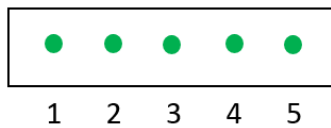
Number of the QR code:

Ex: B\_76\_5

B: tank id (A or B)

76: strip id (from 1 to 99)

5: position in the strip (from 1 to 5)



If pots are rearranged during the experiment, how is the change in spatial position recorded?

All strips move at the same pace. Each plant passes every 2 hour in front of the camera, where a picture is taken. The time of the picture enables to record the moment at which each plant passes in front of the camera. It would be possible to compute the pathway the plant had in the tank between two pictures.

No changes between the two tanks or within each strip (position 1 to 5)

If repeated measurements are taken, at what times are these taken?

Every 2 hours, 24h a day