MEAPLANT INNOVATION

Mission easy Agriculture

Team R&D:

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OUR STORY

A CONTINUOUS EVOLUTION DRIVEN BY A PASSION TO MAKE IT EASY FOR EVERYONE EVERYWHERE TO GROW THEIR OWN PLANTS

Dr. Caterina ALLERA, in her experience as a researcher in the field of soilless cultivation at CREA (Italian Council for Research in Agriculture), has explored various cultivation techniques in natural and artificial substrates which are of great interest due to their greater productivity compared to traditional cultivations on the soil.

The result of her research led her to consider that the complexity of using these cultivation systems is essentially due to the interaction between the cultivation substrate and the nutrient solution supplied to the plants.

The currently used substrates retain the water and mineral salts by absorbing it within their porous matrix. This creates a risk of substrate salinization, making the control of nutrient availability extremely complex. In addition, the moisture retained inside the porous matrix favors the conditions for the formation of fungal diseases that involve the use of sterilization plants.

From these considerations was born the idea behind **MEAPLANT innovation**, that of imagining a cultivation substrate capable of retaining droplets of nutrient solution without absorbing them inside and thus eliminating the complexity of the soilless cultivation techniques in substrate, currently used .

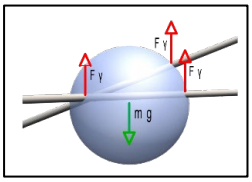
How can we create a substrate that can retain water without absorbing it?

The inspiration of the droplets of water suspended after the rain on nature's elements provided the solution: so was born **MEAPLANT** Innovative substrate.

Many phenomena in Nature involve trapped drops of water: the formation of dew drops on a spider's web, the capture of drops of water on the spines of cacti or the movement of droplets on plant fibers. These phenomena have been studied and explored for various technological applications: from microfluidics for medical and electronic equipment, to harvest nets of the water drops from fog in the desert areas. MEAPLANT's innovation for the first time in history has applied these physical principles to make soilless cultivation simple, efficient and suitable for everyone.

Our cultivation substrate is made up of a mesh of threads made with materials for food use which are hydrophobic and chemically inert.

The drops of water and mineral salts, supplied by an irrigation system, remain suspended on the threads due to the balance that it is established between the surface tension of the drops and their weight.



Equilibrium diagram between the weight (mg) of the drop and the forces that support it due to its surface tension (Fγ).

MEAPLANT MAKES EASY SOILLESS CULTIVATION

FOR EVERYONE EVERYWHERE

- MEAPLANT is an universal cultivation closed loop system, in which it is possible to grow, effortlessly and simply, all the plants usually grown in different systems of soilless cultivation and additional plants that are not usually grown in soilless: vines, citrus fruits, apples, currants, already tested in our system.

- MEAPLANT allows the cultivation also in open air because the plants are rooted as in the natural soil and there is no risk of root asphyxiation in the event of heavy rain: usable on balconies, terraces, roofs, green walls, urban outdoor spaces and in the countryside.

- MEAPLANT hasn't risks of asphyxia of the roots. The substrate never becomes saturated with water because the water is drained and always leaves empty spaces rich in oxygen. The absence of micropores, present instead in current substrates, also prevents the formation of fungi and bacteria; furthermore this substrate is bacteriostatic and doesn't need of special disinfections.

- MEAPLANT growing medium does not absorb salinity. The nutrient solution supplied by the irrigation system is the same as that present at the roots because the solution is not modified by the salts previously absorbed by the substrate. Therefore it is not necessary to carry out continuous checks on the supplied and drained solution. The substrate does not have to be washed and an exhausted solution is not generated which should be poured into the environment . It only needs to add water and mineral salts based on the consumption of the cultivated plants.

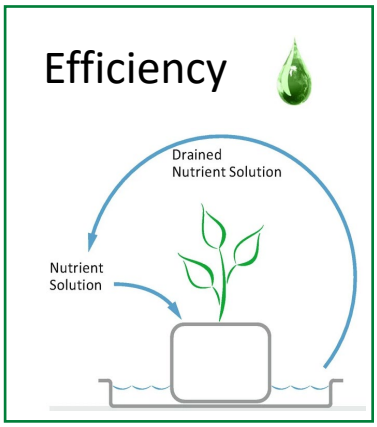
- Irrigation management in MEAPLANT is easy, no need to measure the drainage quantity. The water droplets provided by the irrigation system remain suspended on the substrate's threads mesh. When the suspended droplets increase their mass, they come off the threads by gravity and fall into the tank to be recirculated. The risk of over-irrigation is completely eliminated. There are no risks of root asphyxiation because the substrate is always well oxygenated as it never becomes saturated with water. Therefore it does not require particular skills in choosing the duration and frequency of irrigation. For example, you can increase the frequency of irrigation during the hottest hours of the day without the risk of overwatering or increasing the salinity in the substrate.

- MEAPLANT allows the simultaneous cultivation of plants with different water needs, watermelons can be grown together with succulents with the same irrigation cycle.

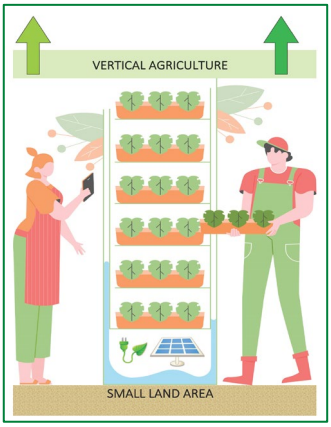
- In MEAPLANT cultivation substrate all the droplets are available for the roots, the water potential is equal to 0. The roots do not have to do any work because there is no absorption force exerted by the medium as instead happens in current substrates.

- MEAPLANT's cultivation substrate is made of recyclable materials or biomaterials for food use.

MEAPLANT is the only system that allows you to cultivate a real vegetable garden for everyone, everywhere, due to its simplicity of use: it is only necessary to periodically add water and mineral salts into the tank and turn on the irrigation timer, without any particular checks and wait for the plant growth. MEAPLANT can also be an important solution to guarantee food safety in arid areas, with water scarcity and also in large metropolises due to their vulnerability in case of emergency.



Water saving 90%



Space efficiency

Versatility for small or large spaces

Sustainability - Carbon Footprint

- Recycling materials
- Water recycling
- Recycling of mineral salts
- No release of fertilizers into the environment
- No use of pesticides
- **Negative Carbon Footprint**

LCA

(Life Cycle Assessment)

By eliminating the need for soil, reducing water usage, and using only mineral salts to nourish the plants, our cultivation methods promote sustainable agriculture practices that are gentle on the environment.

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