BiosHydrogel

Bio-degradable spongy matrix

A new product of interest for vertical farming and regenerative agriculture

Alternative substrate to peat

Prebiotic inoculum medium

Preformed substrate for vertical farming

In the dry state, it has a very rigid and consistent consistency, but in the presence of water it is able to hydrate and take on a soft consistency without however dissolving. In anhydrous conditions the structure has an almost unlimited duration; in humid conditions it maintains its structure for sufficiently long but limited times and depending on the environmental conditions (temperature, humidity, microbial activity, etc.) as it undergoes degradation processes due to microbial, chemical and enzymatic activity.

Sustainability

The matrix is entirely made of products of natural origin and able to positively interact with the biosphere and soil.

Circular economy

It can be synthesized with various inerts & residues: cellulosic residues, natural fibers including paper, wood, rice husk, straw, algae residues etc.

It's very easy to find raw materials suitable for the production process, ant it can be easily established on several geographical locations.

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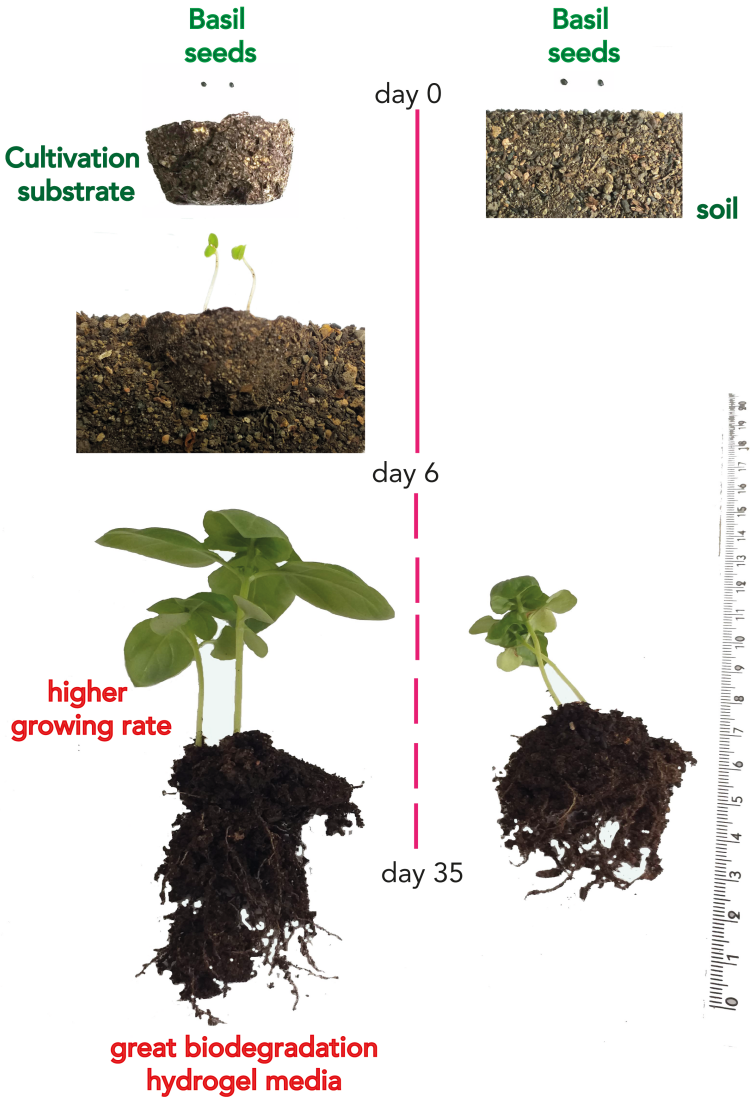
Compostable & bio-compatible

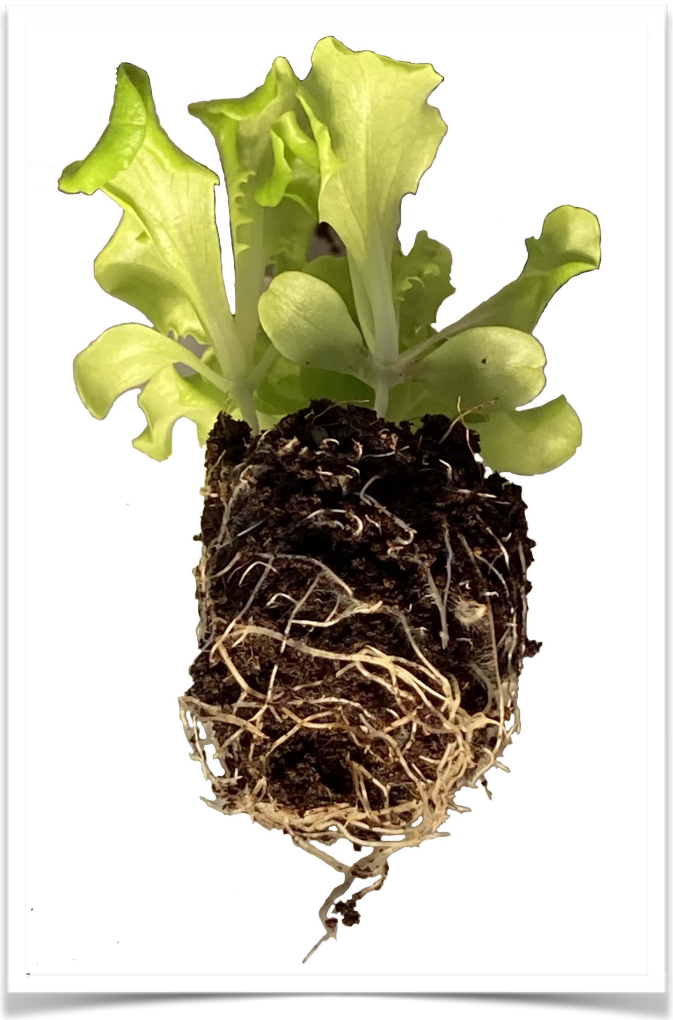
The matrix is compostable, its degradation releases strategic substances capable to enhance the fertility and structure of the soil: clay, humic acids and organic matter.

Excellent compatibility with plants and microorganisms. The degradation of the substrate in the soil shows his nutritive effect . Seedlings transplanted in to the soil, grow better and faster in presence of this substrate.

Vertical farming trials were conducted at an Italian company with which BH is in close collaboration: "APE GREEN".

Optimization tests are currently being developed to make the substrate competitive with the top-of-the-range products on the market.





"Perform" suitable for vertical farming

Mushrooms and vegetables can be growth on this new media, the composition can be modulated in reason to obtain the best growing media for each species.

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Modulability:

The characteristics of the product can be easily modified:

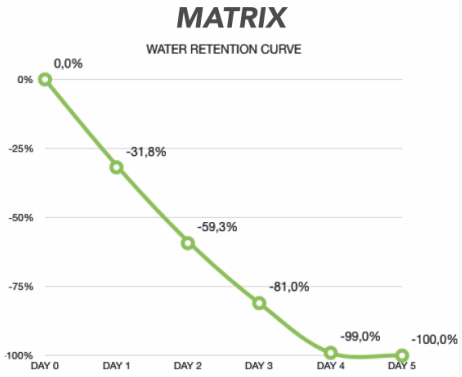
consistency or softness

water retention & water retention curve

Bulk density	0,099	gr/ cm³
Water retention capacity	8,09	w/w
Water retention half life	2	days

dry

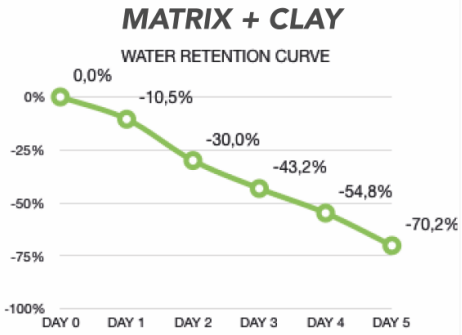
soaked



Bulk density	0,18	gr/ cm³
Water retention capacity	2,95	w/w
Water retention half life	4	days

dry

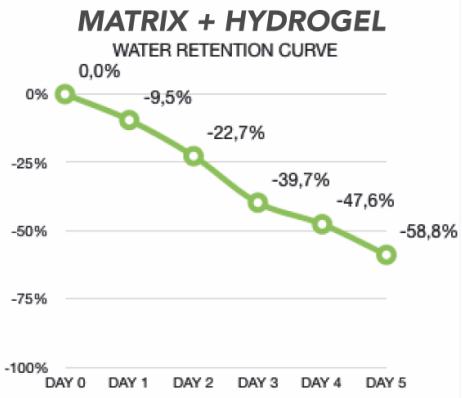
soaked



Bulk density	0,33	gr/ cm³
Water retention capacity	3,66	w/w
Water retention half life	5	days

soaked

section



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Green synthesis

The synthesis of the matrix does not require high energy inputs, nor raw materials dangerous for the environment; it does not create hazardous waste for humans or the environment.

The product can be synthesized with a technology already identified in collaboration with a company in northern Italy.

Degree of technological readiness

The product was tested in the laboratory, in an assisted climate environment and the first open air tests were conducted. Trials are underway to evaluate commercial applications. TRL 4-5