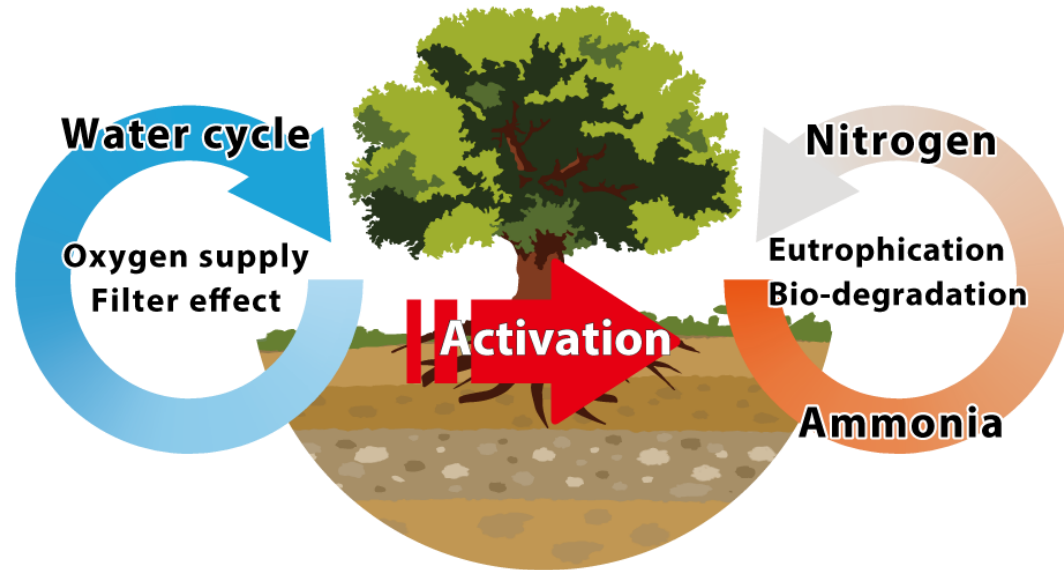




# SoBiC, an automatic plant cultivation system that uses neither electricity nor machinery



Japan Domestic Home models

SoBiC is a completely new plant cultivation technology that utilizes the expansion pressure of air (atmospheric pressure change) caused by the heat of solar radiation.

Water is automatically irrigated when the sun rises, and when the temperature drops, such as at night, air contraction sucks up the water accumulated on the bottom surface and circulates it.

This optimal water circulation in response to natural rhythms and environmental changes activates the microorganisms in the culture medium. Nutrients are naturally produced at the same time as natural purification, and an optimal growing environment is automatically generated.

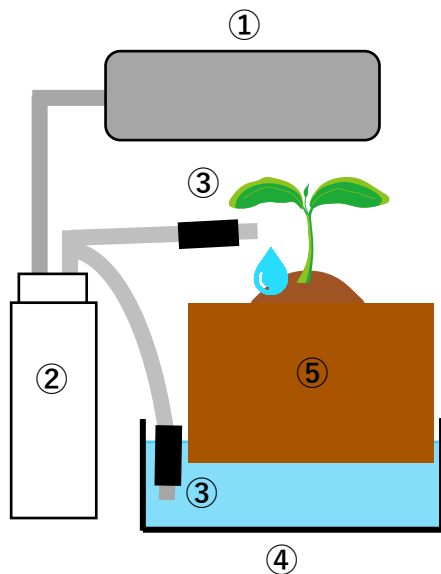
\*The amount of irrigation water varies depending on various factors such as temperature, humidity, wind strength, and water temperature, with the intensity of solar radiation as the main supplemental factor.

In other words, with SoBiC, daily watering can be automated and plant cultivation can be done without electricity or machinery, saving water and fertilizer.

# SoBiC Mechanism

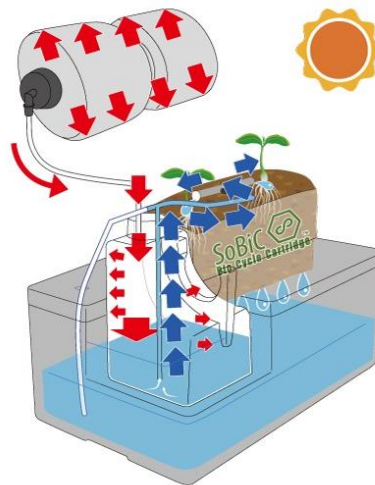
SoBiC consists of an “Air chamber” that receives solar radiation to generate pressure, a “Pump” that accumulates water and sends it out, a “Rectifier (check valve)” that controls the flow of water, a “Soil” for growing plants, and a “Base” that holds water on the bottom.

The rights have been established in more than 20 countries around the world based on a very simple and extensive superordinate concept of "automatic circulation of water using the pressure of thermal expansion and contraction caused by temperature changes in the air due to solar radiation.



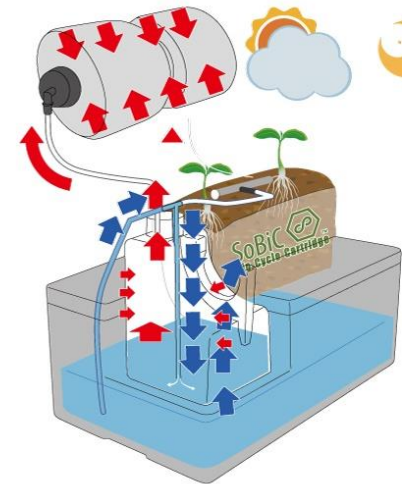
- ① Air chamber
- ② Pump
- ③ Rectifier (check valve)
- ④ Base
- ⑤ Soil

## When sunny:irrigation



Solar radiation expands the air in the air chamber and pushes water out of the pump to irrigate the plants. The amount of irrigation is proportional to the intensity of solar radiation.

## Cloudy weather and at night: refill the pump with water



After irrigation, when it is cloudy or at night, the air in the air chamber cools and contracts, becoming a pulling force that returns water at the bottom back into the pump. (Water circulates)

\*Fertilizer components of the soil that have dissolved into the water are also circulated together.

## Simple

The simplicity of the mechanism means that only a few components are required, making it easy to understand and apply.

## ECO

Saving water, saving fertilizer, not using electricity, and reducing CO<sub>2</sub> emissions

- Greening and cultivation of vegetables and fruit trees can be realized without the need for daily watering.
- Can be used as urban green infrastructure facilities (control and utilization of rainwater runoff)
- Can be used for various vegetables, trees, and fruit trees by adjusting the amount of water and the volume of the growing medium.
- Fewer requirements are needed for production, and existing products can be used for production. (Low manufacturing costs)
- Since the system is powered by solar radiation, there are no CO<sub>2</sub> emissions (no electricity is used and water and fertilizer can be saved).
- No software settings, so even children, the elderly, and those who are not strong with machines can use it safely.
- A soil environment that matches the crop can be prepared immediately, and continuous cropping can be done without a fallow period by replacing the soil. (Easy to plan cultivation according to demand)

- Green infrastructure and environmental businesses such as urban agriculture and rooftop greening
- Greening of land that has been difficult to cultivate for greening or agriculture.
- Cultivation of organic vegetables and other crops that are easy to add value to but difficult to maintain in the environment.

It can be used in areas where soil is contaminated or water is precious, as well as to help address water shortages and food problems caused by extreme weather.



Example of installation on an office balcony in Tokyo

## Business Opportunities Expanding with SoBiC

This is a new cultivation method that differs from both open field cultivation and plant factories.

In addition to installation, the use of the product requires soil, fertilizer, and other materials.

No special soil or fertilizer is available. Open field soil and fertilizer can be used.

\*Fertilizer components are circulated with water, so care must be taken with the amount of fertilizer applied to avoid excessive components.

In the case of vegetable cultivation, the company can sell soil and materials, as well as develop an ongoing business of collecting and recycling soil after cultivation and harvest, and selling and delivering new soil. Installation, cultivation consulting, and maintenance also lead to business.

SoBiC can lead to business opportunities all the way from manufacturing to reaching consumers, depending on the idea.

# Utilization as green infrastructure

---

In addition to the rainwater infiltration and storage functions of the soil, the device itself has a water storage function and can be used for rainwater management (storage). The stored rainwater is used directly for growing plants.

Combined with a water storage tank, it can further increase water storage and further reduce stormwater flow.

It can also be used for building rooftop greening and wall greening. (A water storage tank could be placed on the rooftop to collect rainwater and supply water to the equipment on the lower floors by gravity.)

If used to grow vegetables and fruit trees in urban areas, it can create new food production sites. Greening is also expected to improve air quality and contribute to mental and physical health.

No electricity or machinery is used, so there is no need to worry about power outages or system failures, no watering is required, and maintenance is low. It is also resistant to water shortages due to drought.

\*As long as it is in a location that receives sunlight, it can be installed in any location, size, and shape. (Because of its simple structure, it can be manufactured and used freely.)



# Examples of installation and use

\*All in Japan

It can be used to grow vegetables, trees, and fruit trees.

Examples of proven plants :

Vegetables (tomatoes, eggplant, cucumbers, watermelon, corn, sweet potatoes, bitter melon, cassava potatoes, strawberries, basil, etc.)    Fruit trees (grapes, peaches, yuzu, etc.)    Trees (acacia, moringa, etc.)



Tomato cultivation



Cultivation of young yuzu trees  
[Large-scale prototype  
"SoBiC" for trees]



Viticulture



Cultivation of young yuzu trees



Raising seedlings



Tomato cultivation  
[Greenhouse]



Cultivation of various vegetables  
[Greenhouse]



Trial installation of greenery on a balcony in an office district in Tokyo (cultivation of trees, vegetables, strawberries, etc.)



Growing hops and summer vegetables in a plaza in a redevelopment area



Cultivation of muscats and summer vegetables for the purpose of food education and harvest experience at the theme park



# CONTACT

---

Costs will be calculated on a case-by-case basis based on the country of use, purpose, sales strategy, prices, etc.

**Naturedyne inc.**

**Contact person's name : Ishigami**

**E-mail address : [sobic\\_i@naturedyne.com](mailto:sobic_i@naturedyne.com)**