

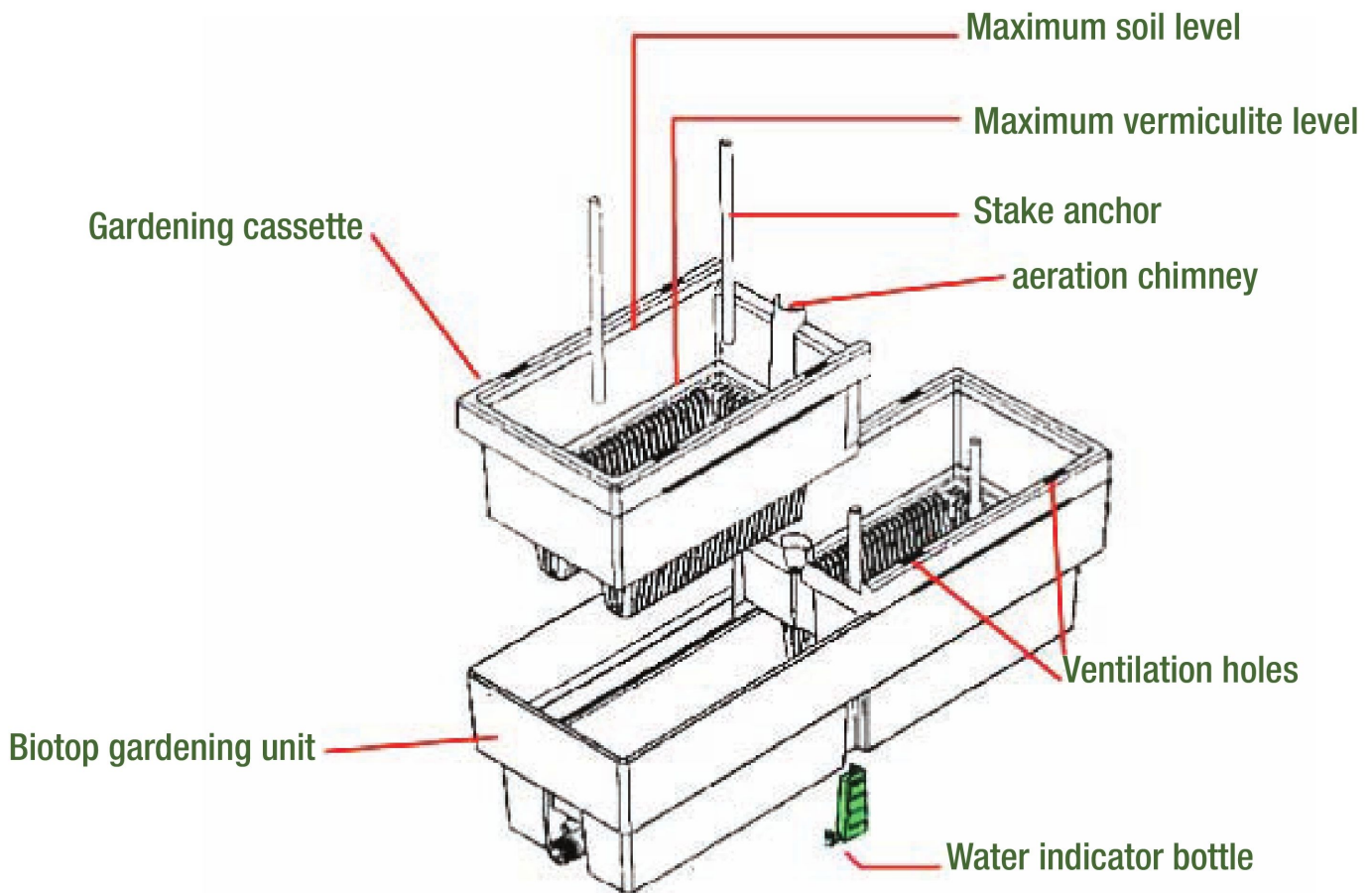
TECHNICAL DATA

Description of the Product and of its Accessories

The BIOTOP system is a complete all-in-one gardening kit that can be used individually or joined together to create a network of interconnected containers that share a common top irrigation water line and a bottom common water reserve.



Here is a description of the system and of its accessories.



Here is a description of a complete BIOTOP gardening kit

- 1- One BIOTOP gardening container
- 2- Two BIOTOP vermiculite grade 4 granules (4 L per bag)
- 3- Two BIOTOP potting soil bags (5 L per bag)
- 4- Two BIOTOP covering mulch (1.5 L per bag)
- 5- Two BIOTOP natural fertilizer powder bags (30 ml per bag)
- 6- One BIOTOP liquid plant nutrient bottle (500 ml bottle)

biotop



TECHNICAL DATA

STABLE COMPONENTS (BIOTOP hardware)

A. One rectangular culture unit

Length of unit	72,0 cm
Width of unit	22,5 cm
Height of unit	25,0 cm
Weight of unit	1300 grams
Color	White (can be modified upon request)
Plastic material	Polypropylene, homopolymer resin, recyclable (code 5)
Charge	Calcium carbonate, 10%
UV stabilizer	Hindered amines (HALS)
Production technology	Injection molding
Capacity of injection press	700 tons
Cavities of production mold	1 cavity
Production cycle	60 seconds
Units produced per cycle	1 unit

B. Two culture inserts to be installed in the culture unit

Length of insert	36 cm
Width of insert	22,5 cm
Height of insert	21,5 cm
Weight of insert	615 grams
Color	Anthracite grey
Plastic material	Polypropylene, homopolymer resin, recyclable (code 5)
Charge	None
UV stabilizer	HALS
Production technology	Injection molding
Capacity of injection press	700 tons
Cavities of production mold	1 cavity in two parts
Production cycle	60 seconds
Units produced per cycle	2 inserts

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STABLE COMPONENTS (BIOTOP hardware)



C. One water level indicator bottle

Plastic material	Polyethylene
Color	Medium green
Production technology	Blow molding
Production cycle	20 seconds
Cavities of production mold	1 cavity

One toric neoprene SPAE-NAUR O-ring has to be manually added to the bottle neck during the manufacturing process.



D. Four stake anchor tubes

Plastic material	Polypropylene
Color	Anthracite grey
Production technology	Extrusion



E. Two screwable rigid plastic connectors

Plastic material	Polypropylene
Color	Same as rectangular culture unit
Charge	10% talc
Production technology	Injection
Cavities of production mold	10 cavities
Production cycle	20 seconds

Those rigid plastic connectors have to be manually installed on both ends of rectangular culture unit during the manufacturing process.


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STABLE COMPONENTS (BIOTOP hardware)



F. Two large stoppers

Plastic material	Neoprene
Production technology	Injection
Cavities of production mold	10 cavities
Production cycle	30 seconds



G. Two small stoppers

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H. One large connecting tube

Length	240 mm
Interior diameter	26 mm
Exterior diameter	29 mm
Plastic material	Polyethylene
Color	Medium green
Production technology	Extrusion



I. One small overflow connecting tube

Length	240 mm
Interior diameter	12 mm
Exterior diameter	16 mm
Plastic material	Polyethylene
Color	Medium green
Production technology	Extrusion

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TRANSIENT COMPONENTS (BIOTOP software)

BIOTOP vermiculite material
4 L bags
500 grams per bag

BIOTOP potting soil mix
5 L bags
2,5 kg per bag

BIOTOP covering mulch
1,5 L bags
500 grams per bag

BIOTOP liquid plant nutrient
500 mL bottles
500 grams per bottle

Specifications for an entire culture unit

One rectangular container complete with water indicator bottle and water stoppers/connectors
Two culture inserts
Two bags of BIOTOP natural fertilizer powder
Two bags of BIOTOP vermiculite
Two bags of BIOTOP potting soil mix
Two bags of BIOTOP covering mulch
One bottle of BIOTOP liquid plant nutrient
One instructions guide

Maximal water capacity of unit



Weight of culture unit:

plastic only
2530 g (2,5 kg)

plastic components + vermiculite
3530 g (3,5 kg)

plastic components + vermiculite + potting soil
8530 g (8,5 kg)

plastic components + vermiculite + potting soil + covering mulch
9530 g (9,5 kg)

plastic components + vermiculite + potting soil + covering mulch + full water reserve (10 Litres)
19530 g (19,5 kg)

plastic components + vermiculite + potting soil + covering mulch + full water reserve + vegetation (average weight)
25000g (25 kg)

Average surface area covered by one BIOTOP unit complete with mature vegetation
0,5 square meter

Average weight of complete unit with mature vegetation per surface area
25 kg per 0,5 square meter
50 kg per square meter, as two BIOTOP units will cover one square meter.
(11 pounds per square foot)

Maximal weight of complete unit with mature vegetation per surface area
in the case of very large plants grown in the system
75 kg per square meter
(16,5 pounds per square foot)

TECHNICAL DATA

TRANSIENT COMPONENTS (BIOTOP software)



SCIENTIFIC PRINCIPLE OF SYSTEM

The scientific principle is that the system always provides a buffer zone of air and slightly damp vermiculite between the water reserve and the compost layer.

It is not an hydroponic system, as it does use real potting soil.

Hence, it allows the growth of a dense and ramified root system, by providing roots the opportunity to differentiate and to segregate in two distinct environments.

The tap roots will differentiate in the lower water reservoir compartment, and the nourishing roots will differentiate in the upper compost compartment.

Moreover, the nourishing roots will be encouraged to associate with beneficial microorganisms in the compost phase. This is the basic principle of organic gardening.

Plants will reach their full maturity without repotting.



CHARACTERISTIC OF SYSTEM

This innovative container design and technology does indeed eliminate the root spiral formation which is commonly observed in all small and medium size plant containers.

Simple and user friendly, the BIOTOP system proved to be compatible to the culture requirements of a very large variety of ornamental, vegetable and shrub plants.

Its instructions for use are easy to understand for all gardeners.

Once correctly assembled and started, the system maintains itself through a precise fertilization schedule and constant water level that has to be maintained at all times.

In fact, results can be fully guaranteed if the user correctly follows instructions and keeps adequate standard plant maintenance procedures such as pruning, cleaning, pest and disease control.

A correct water level has to be maintained in each individual plant culture unit. An easy-view indicator tells the user at a glance if the system needs to be filled with water.

Overwatering will not hinder the performance of the system because overflow pipes and aeration vents will always keep intact the concept of an air layer sandwiched between the maximal water level of the bottom reservoir and the compost layer.

In the case of a large number of interconnected BIOTOP culture units such as a large rooftop intensive or extensive garden assembly, a drip irrigation line complete with timers, valves, water sensors and even automatic fertilization dispensers can be adapted to the system.

However, such an installation requires the supervision of an ELT-BIOTOP certified irrigation specialist.



COMPARISON OF BIOTOP SYSTEM WITH OTHER CULTURE SYSTEMS



Hydroponics or aquaculture:

The entire root system is immersed in nutrient water

Success is ensured by keeping the perfect amounts of synthetic fertilizer to be given to plants



Aeroponics

The roots of the plants are suspended in air, and a nutrient water mist is vaporized on the roots to maintain them humid

Success is ensured by keeping an optimal balance between the air, the water and the nutrient solution misted on the roots.



Conventional agriculture (monoculture)

Plants are grown in soil, loam, sandy loam or compost, and synthetic fertilizers are used along with pesticides and herbicides.

Success is ensured by proper soil conditioning, adequate pest control, adequate irrigation and proper fertilizer use.



Organic agriculture

Plants are grown in compost and no synthetic fertilizers, pesticides or herbicides are used.

Success is ensured by proper compost conditioning, adequate irrigation, and mostly by keeping an optimal chemical balance in the soil by encouraging optimal microbial life in the compost phase.



BIOTOP system

It is a specialized technology inspired from organic agriculture that is performed in a specialized container system.

Success is ensured by providing the roots the opportunity to differentiate and segregate into their nutritive and water absorbing function through a root-forming interface support element.

The system is compatible to both organic and conventional agriculture methods.



Biodynamic culture

Plants are grown and cultivated according to lunar cycles and/or astronomical points of reference.

Success is ensured in part by taking into consideration the position of different celestial bodies in the sky according to the season.

Actual purpose and efficiency of this culture method are yet to be seriously tested and explained scientifically.

TECHNICAL DATA

Complementary informations



Weight per m²=

Weight of one complete unit with dry consumables: **9,5 kg**

Weight of one complete unit with wet consumables: **19,5 kg**

Weight of one complete unit with wet consumables and mature plants: **25 kg**



Maximal number of BIOTOP units per square meter of embellished surface: 4 units, not more.
This gives a container density of 4 units per square meter or 4 units per square yard of rooftop surface

Dry weight = **4 X 9,5 kg = 38 kg**

Wet weight = **4 X 19,5 kg = 78 kg**

Maximal weight of one square meter: **4 X 25 kg = 100 kg or 220 lb**

This density is recommended for the cultivation of small plants such as most herbs, onions, lettuce, wax beans, leeks, celery, carrots etc... and small flowers.

Just like in a suburban garden.



Average number of BIOTOP units per square meter of embellished surface: 3 units.

Dry weight= **3 X 9,5 kg = 38.5 kg**

Wet weight= **3 X 19,5 kg = 58.5 kg**

Average weight of one square meter: **3 X 25 kg = 75 kg**

This density is recommended for the cultivation of average size plants, such as small varieties of tomatoes, eggplant, bell peppers, Swiss chard, potatoes, corn, etc...most flowering annuals and perennials, tropical plants and roses.

Just like in a suburban garden.



Lower than average BIOTOP units per square meter of embellished surface = 2 units.

Dry weight = **2 x 9,5 kg = 19 kg**

Wet weight = **2 x 19,5 kg = 39 kg**

Minimal weight of one square meter: **2 X 25 kg = 50 kg**

This density is recommended for the cultivation of LARGE varieties of plants, such as most tomatoes, eggplant, potatoes, etc...



Minimal number of BIOTOP units per square meter of embellished surface : 1 unit

Dry weight = **9,5 kg**

Wet weight = **19,5 kg**

Minimal weight of one square meter = **25 kg**

This density is recommended for the cultivation of LARGE plants, such as cucumbers, water melons, cantalope, pumpkin, squash, banana, and LARGE tropical plants.



Water requirements, on HOT late summer days when plants reach maturity or during prolonged periods of drought:

For small plants: **4 L per day**

Average size plants: **10 L per day**, that is, one reservoir filling per sunny day.

Large plants: up to **20 L per day**, that is, two reservoir fillings per sunny day.

In the case of an average summer, water requirements are 25% less.

Always use an automatic water irrigation system with timers and water detectors and valves when assembling a large BIOTOP system (more than 10 connected units).

Maintenance of an automatic system of interconnected containers:

Automatic water filling of reservoir: once a week when plants are young

Once a day when plants are mature.

Very thirsty plants like tomatoes will simply draw water from the reservoir of their less thirsty neighbor gardening units, such as those growing leeks, for example.

Pest control: When needed, insecticidal soap, wet the plants on both sides of foliage

Fungal disease control: When needed, copper sulfate spray against mildew, black spots, especially on squash, cucumbers and roses.

Fertilization : Every 10 calendar days for optimal and professional results.

Weeding: Not necessary if BIOTOP mulch is used as a ground cover

Harvesting: Weekly.

Flower cutting: Daily.

Life span of system: Minimum 15 years without chipping, decoloration or deformation

Expected lifetime : 20 years, perhaps even more.

Production: As an average, one BIOTOP unit will produce 3 kg of edible harvest per summer season (May to October)

Hence: Lettuce, leek, herbs, onions, wax beans...: **4 units per square meter, 4 X 3 kg: 12 kg** of harvest per square meter.

For larger vegetable plants : **3 X 3 kg = 9 kg** of eggplant, celery, bell peppers, tomatoes...per square meter.

For very large plants, 3 kg of vegetables per square meter, that is, cucumbers, dill pickles, melons, pumpkin, etc...often more (we often get 3-4 water melons per unit during a summer season, starting from seed.)

RESTRICTIONS:

Plants that develop specialized roots such as beets, turnips, rutabaga and long carrots will not find enough space in the slotted inserts without developing abnormalities, The foliage part will be beautiful nonetheless.

Smaller root type plants will thrive, eg. globe carrots, radishes, small onions.

Plants of the cabbage family (Crucifers) will find rooftop growing conditions too hot. Those plants do better in cooler climates or environments. They will be happy when being surrounded by other plants whose foliage will capture ambient heat.