

# *SPONGYMER*

*Water retainers  
for Soils and  
Substrates*



## General presentation

SPONGYMER is a water retainer that, when incorporated into a soil or a substrate, absorbs and retains large quantities of water and nutrients. Unlike most products that become hydrated, SPONGYMER has the property of easily releasing the absorbed water and nutrients, thereby allowing the plant to have water and nutrients available at will as a function of the absorption – release cycles.

### SPONGYMER

- Increases the Water Holding Capacity of soils
- Enhances plant growth. Water and nutrients are available in the root zone for optimal absorption by plants.
- Provides a buffer effect against climatic hazards

There are many applications in agriculture: tree planting, nurseries, transplanting, landscaping, large scale farming etc...

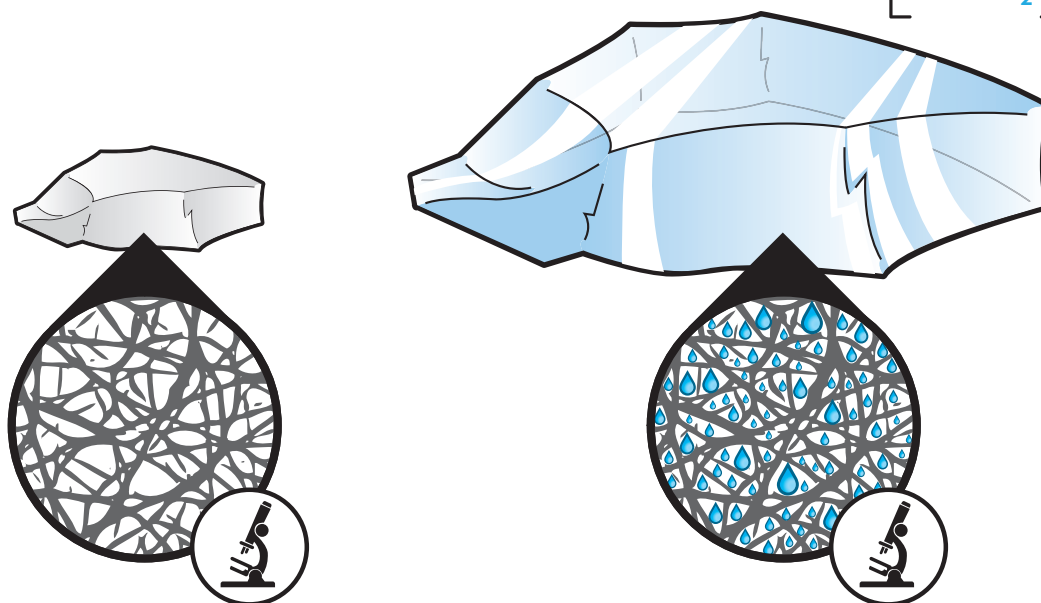
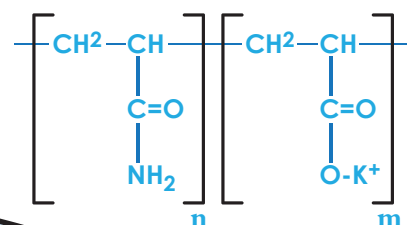


### COMPOSITION

SPONGYMER is a superabsorbent anionic polyacrylamide polymer. It is a crosslinked copolymers of acrylamide and potassium acrylate that is water insoluble.

### HOW IT WORKS

The SPONGYMER has the property of absorbing up to four hundred times its weight in distilled water and it becomes gel.



In contact with water, the polymer network expands thanks to an osmosis process and stores the liquid into its structure.

Into the soil, the SPONGYMER swells in wet conditions and readily releases the liquid in dry conditions.

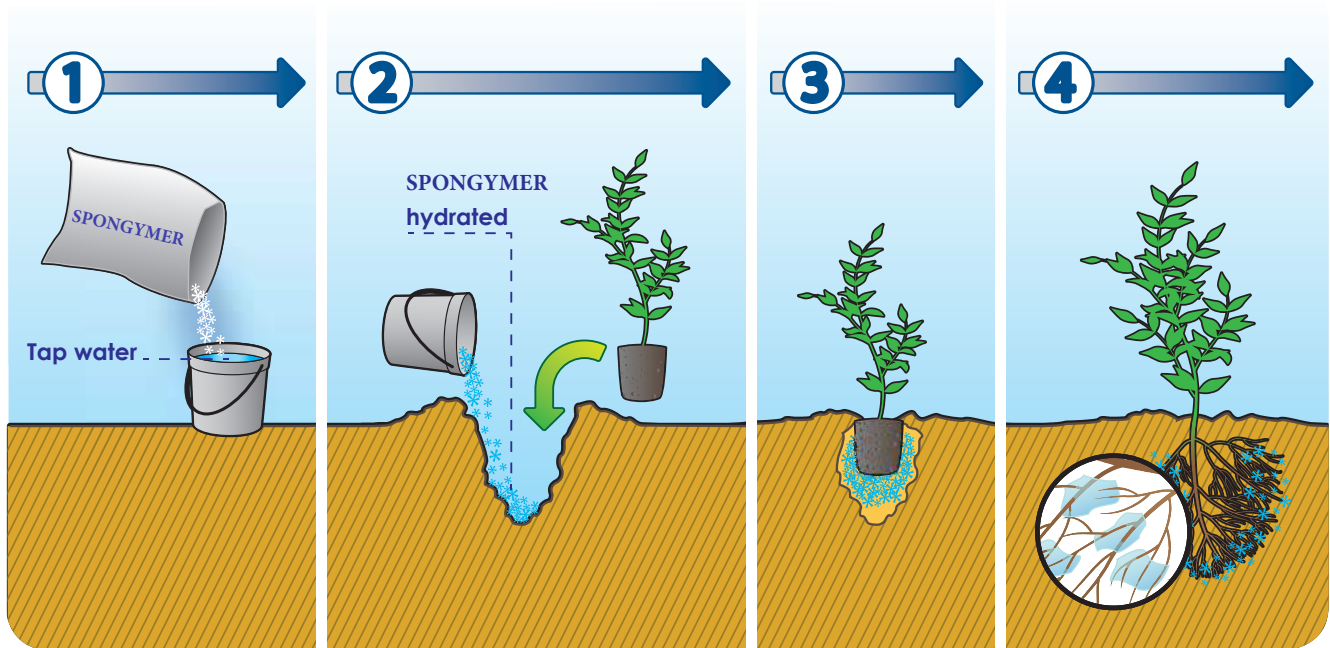
This liquid absorption/desorption cycle enhances the water availability to the roots and reduces hydric stress.

## Methods of incorporation

Three main methods of incorporation are proposed according to the application considered.

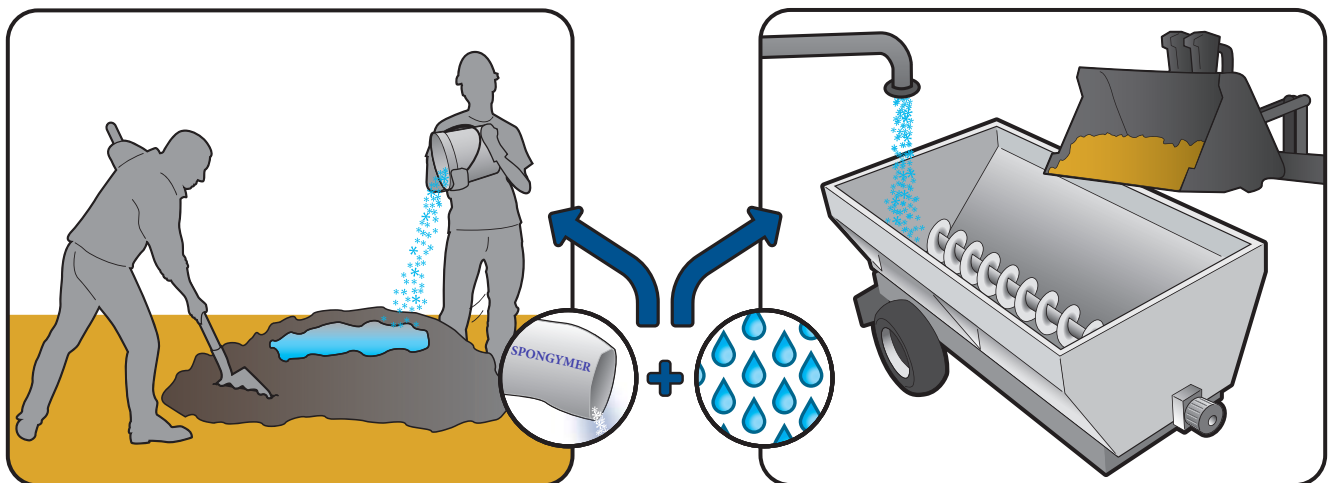
### Forestation

The SPONGYMER pre-hydrated is implemented directly in the field, by hand or with specific tools (forestation; landscaping).



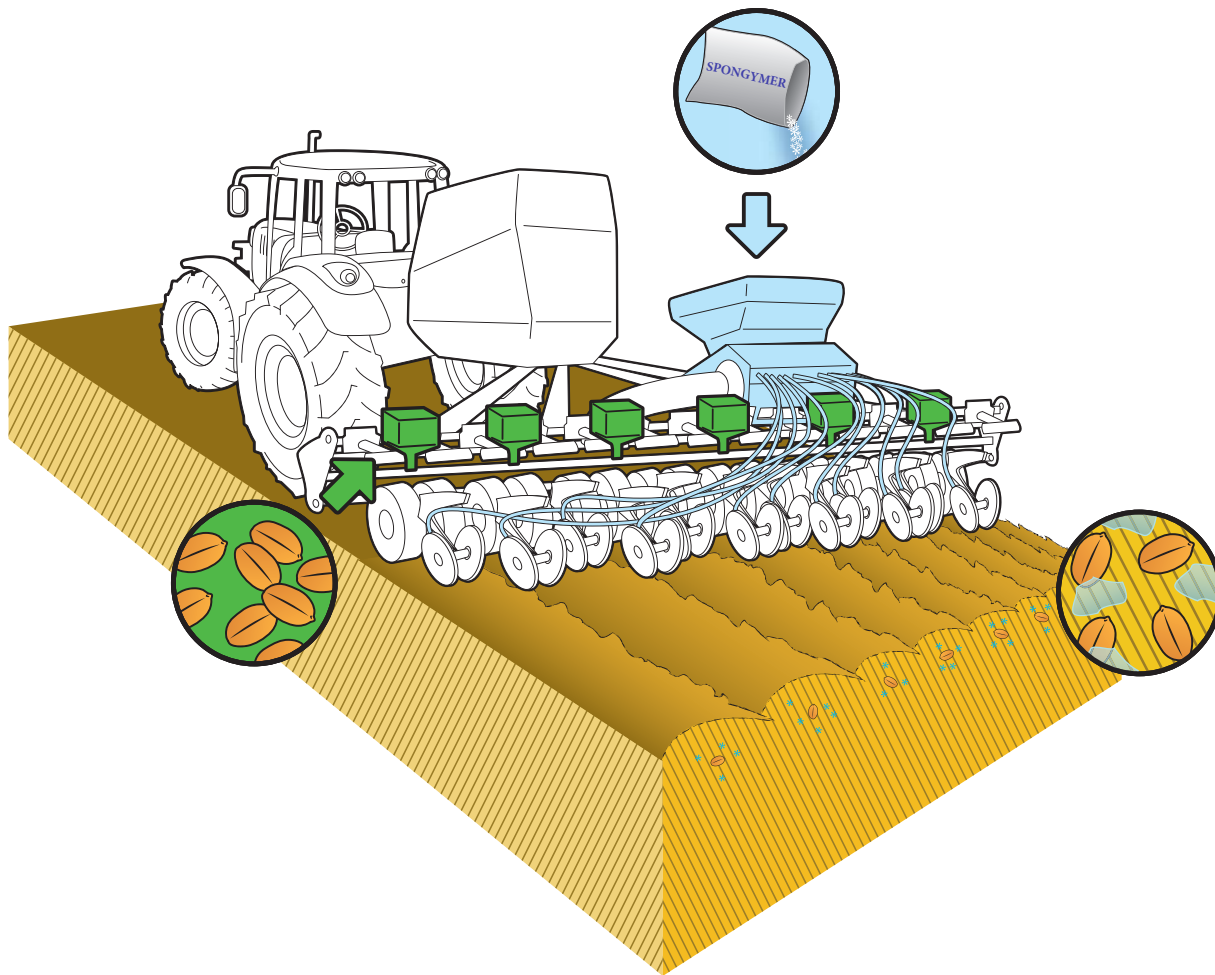
### Potting mixes

SPONGYMER is incorporated into a substrate (dry or hydrated), the "mixed" being used for nurseries or potting mix.



## Large scale farming

The **SPONGYMER** is implemented in the sowing coulters during the crops sowing, by using a pneumatic micro granular spreader. Whatever the mode of incorporation is, the product has to be properly buried into the soil, to be protected from UV radiations.



## Applications

### Forestry

**SPONGYMER** is effective in the planting of trees, it makes it possible to reduce the mortality rate due to transplanting shock and to enhance root development and therefore bring about more rapid growth and production. Its efficiency for Eucalyptus or coffee trees plantations is widely recognized. Moreover, innovative methods have been developed to incorporate the product into the soil, with a reduced cost and a daily gain in working time.



*Implementation of Eucalyptus with pre hydrated gel (Hrydroplan, Brazil).*

**SPONGYMER** also open up new doors to rehabilitate areas submitted to major pedo-climatic constraints. “Biodiversity hotspots” could be implemented in dry areas with poor soils which present important implications for environmental projects, like the African green barrier for instance. At countries level, it provides new keys for land use planning.

## Horticulture

Mixed into a substrate, **SPONGYMER** permits an efficient use of water and nutrients which are concentrated in the product. It ensures that cuttings and transplants take root better, that seedlings grow faster and root systems develops in a homogeneous way. It allows to free itself from problems of hydric stress and from deficiencies. It is an ideal solution of substrates for containers, fruits and vegetable productions and houseplants. With **SPONGYMER**, field capacity of substrate increase and so stretch out period before to reach the permanent wilting point. Thus, free water is easily available, watering frequencies are commonly reduced by 30 to 50 %, which likewise reduces labor costs and the amount of water used. Furthermore, during transport, **SPONGYMER** maintains sufficient moisture and reduces hydric stress.



## Large scale farming

**SPONGYMER** has shown its effectiveness in large scale farming, especially at the time of germination and development of the root network. The water (from rain or irrigation) is stored and released to the grains and the young plants, which delays the wilting point. It makes possible for the plants to be well established while waiting for the water regime to become adequate. During the growing season, the “absorption/release” cycles are beneficial to the global plants health.



*Hydrogel on corn rooting system*

# SPONGYMER Water Retainers for Soils and Substrates

By buffering climatic hazards the agronomic performances are stabilized over time, which make these technologies very attractive for farmers, all the more so that they can implement their crops early. It facilitates the organization of the work at farm scale: access to land for the machines, human resources availability etc...

When incorporated with a microgranulator, the financial investment is reasonable, the quantity of product applied being low (5 to 50 kg/ha). It has been developed for corn, the same implementation method can be considered for other annual crops (wheat; sunflower; cotton etc...) and has to be adapted according to the local situations.

## Hydroseeding

**SPONGYMER** is commonly used in hydroseeding to stabilize newly graded soils. Mixed with cellulose mulch and soil conditioners, it makes it possible to maintain a minimum of surface water. Increased moisture in the mulch mix prevents the product from drying out quickly and provides additional moisture for seed germination and stand establishment.

Adding **SPONGYMER** also increases the consistency of the slurry mix and allows the hydroseeding applicator to cover more ground by "shooting" the mix further and more uniformed. Then, the vegetation cover develops over the whole treated surface, there are no dry spots without grass.



*SPONGYMER application with corn seed drill.*



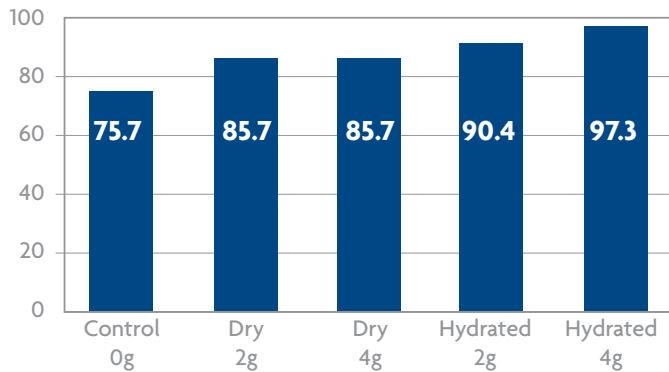
*Hydroseeding application (Euro-Tec, France)*



## Technical results from some users of SAP

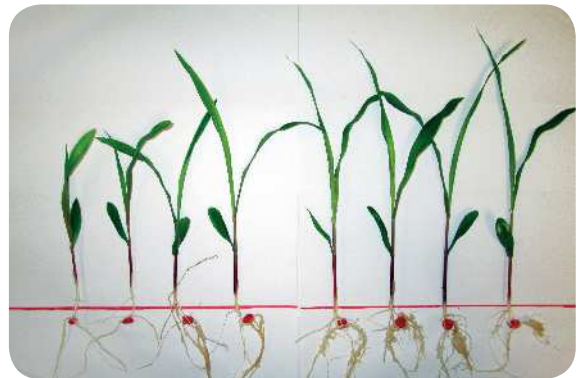
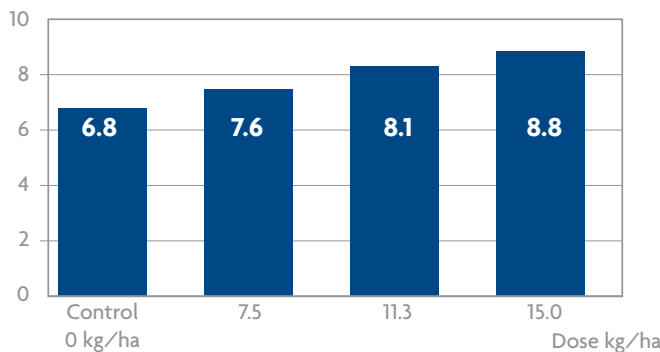
Impact of SAP use on *Eucalyptus urophylla* survival rate during the implementation phase (Brazil)

**Eucalyptus Survival Rate (%)**



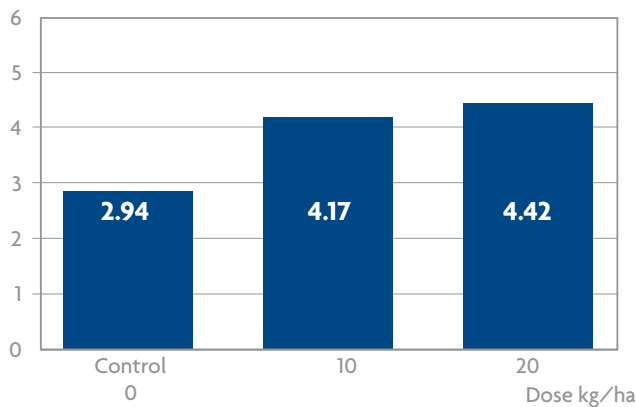
Impact of SAP use on corn yield (China Agricultural University)

**Corn Yield (t/ha)**



Impact of SPONGYMER on corn yield on large scale plots (product applied with a microgranulator during the crop sowing)

**Corn Yield (t/ha)**



Control

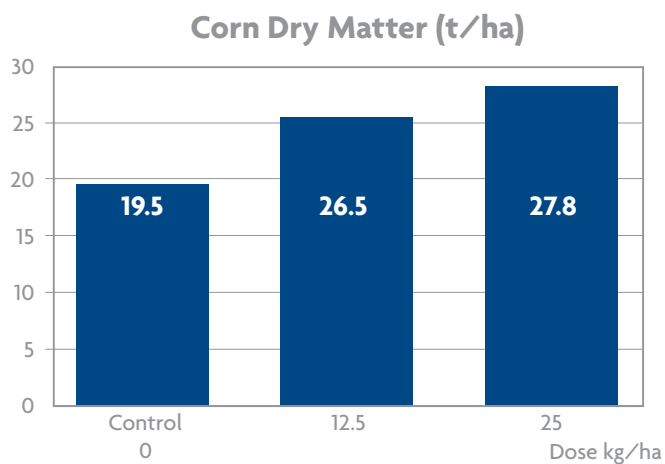
10 kg/ha

15 kg/ha

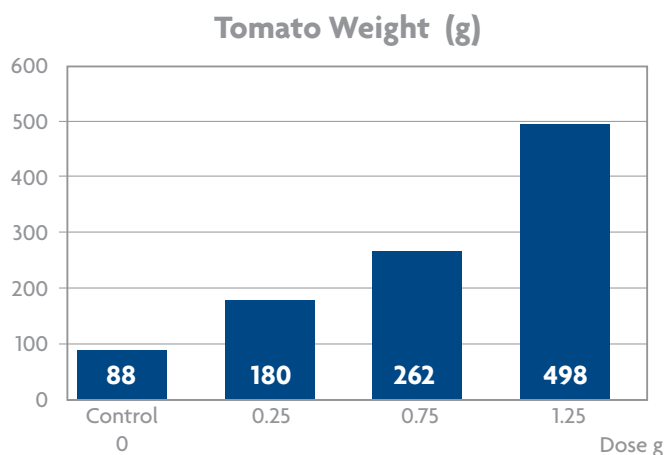


# SPONGYMER Water Retainers for Soils and Substrates

Silage corn- dry biomass (t/ha), Mexico



Impact of SPONGYMER on tomato production (Pakistan)



Ind.	nb leaves/plant	nb branches/plant	fresh weight/plant
Blank	84.67	10.0	12.4
0.25%	110.0	12.3	36.5
0.75%	200.0	16.0	44.6
1.25%	348.3	20.0	90.9

## SPONGYMER *physico-chemical properties*

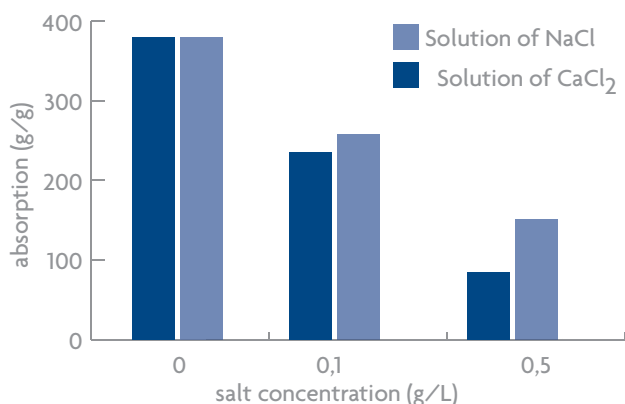
### Granular size

SPONGYMER is offered in different particle sizes depending on the conditions in the soil environment. In addition to water retention, the absorption/desorption cycle of the SPONGYMER creates soil porosity improving aeration balance.

### Water absorption capacity

The water holding capacity of the SPONGYMER is highly dependent on the electrolyte concentration in water. The absorption capacity of SPONGYMER in substrates varies between 100-200 times its weight.

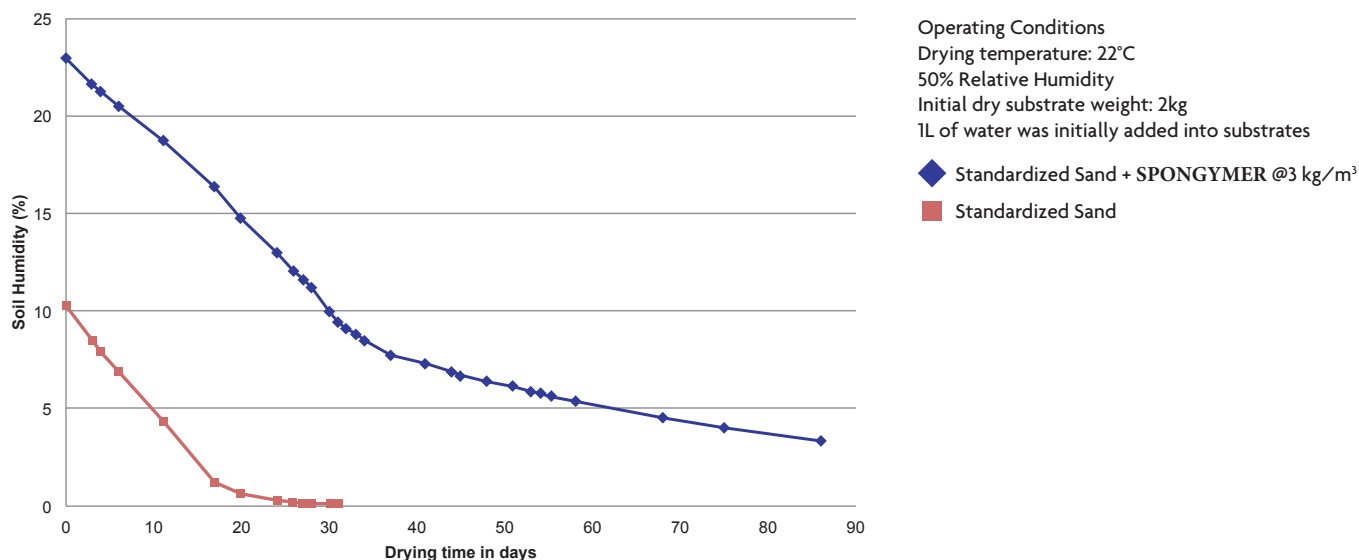
*Influence of electrolytes on the swelling capacity*



### Delayed Wilting Point

SPONGYMER makes it possible to increase the water holding capacity of soils and to delay the wilting point. A sandy soil treated with 3 grams of SPONGYMER/kg of soil holds water twice as long as untreated soil.

#### Drying speed in sandy soil



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