LITE-SOIL

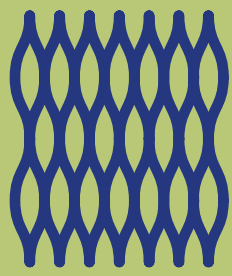
All in ONE: Air-Soil-Water

ACTIVE UNDERGROUND IRRIGATION – EFFICIENT AND PRECISE

DIRECT IRRIGATION SOLUTIONS

City trees	Water accumulator close to the roots
Fruit trees	Up to 70% water saving
Viticulture	Excellent water storage
Lawns	High conductivity / drainage capacity
Athletic fields	Optimal aeration
Football fields	Enhanced vegetation
Golf courses	Cost-efficient
Slopes	Simple installation at any desired depth
Green roofs	Three-dimensional installation possible
Plant pots	High flexibility / adaptability
Raised planting beds	Light weight
etc.	Erosion protection

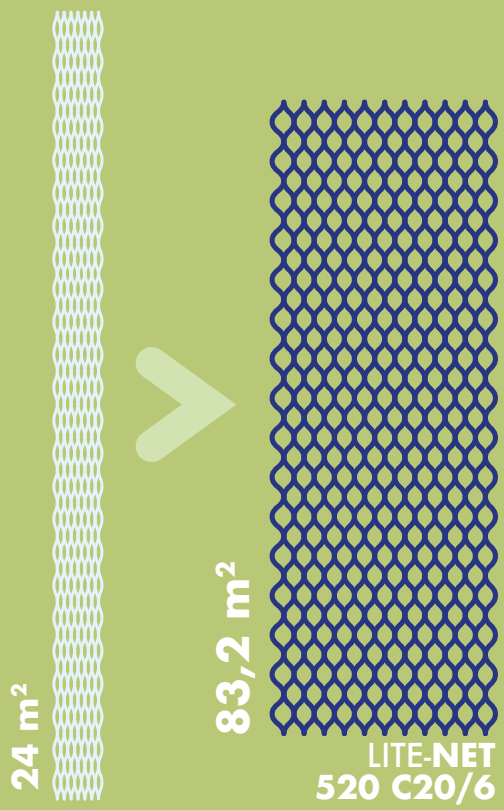
What are LITE-**DRAINS**?



LITE-**DRAINS are THE modern and cost-efficient solution for the direct irrigation and aeration of your plants.**

To achieve more efficiency with less material – that is the core idea behind our products.

With LITE-**DRAINS** we offer you a range of products which not only optimally irrigate and aerate your plants, but also give them enough space to grow, root and thrive. Particularly with challenging soil conditions such as erosion, drought, capping and slopes!



Saving cost thanks to intelligent design

We design our high quality geotextiles in precise and functional nets and strips, in order to achieve the most efficient greening effect with the best material while maintaining a low price. Our products have an extremely high water storage capacity due to their 90% interconnected void content. These voids can be filled with water, and – similarly to a wick – distribute it exactly to where it is most needed: directly to the roots. Our products can thus store 8 times more water than conventional products.

Our nets can be stretched, increasing their width up to 4-5 times! This way you save unnecessary material and costs.

Our products are available in three different materials: sustainable and reusable polypropylene (PP) as well as 100% biodegradable PLA (5 seasons) and wood fibre (WF, 1 season)

Excellent results, scientifically tested

Together with the University of Natural Resources and Life Sciences Vienna (BOKU), we have carried out several tests that confirm LITE-**DRAINS'** advantages:

+ LITE-**NET** saves up to 6 times more water than conventional coir mats (after 24 hours)

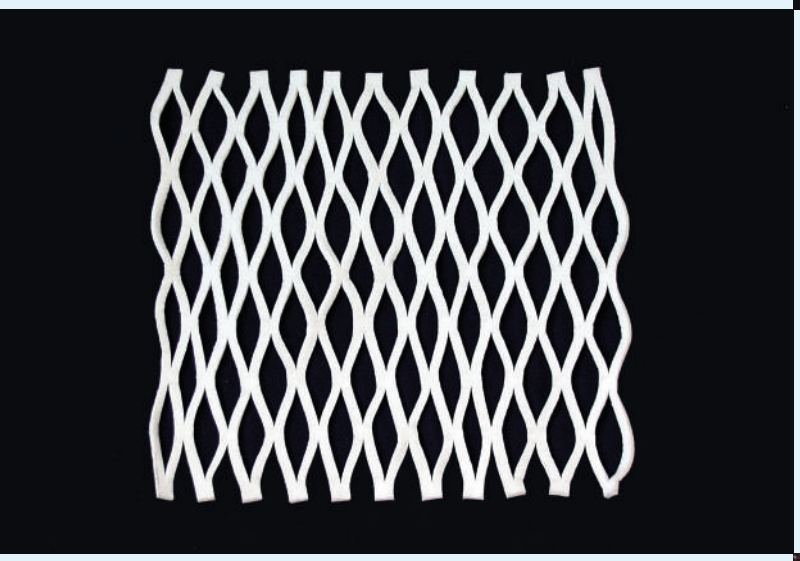
+ The greening effect of LITE-**NETS** is 50% higher than conventional coir mats

+ LITE-**STRIPS** mixed into the soil have a 8 times higher water storing capacity per kg than conventional clay aggregates (LECA)

BOKU

LITE-**STRIPS**

The usually 7 and 12 cm long **LITE-DRAIN** strips mainly act as a water storage system for multiple applications. For this purpose, the thick nonwoven strips are mixed into the soil (depending on the application from 2 to 20% of the soil volume). Up to 90% of the strips' volume can be filled with water, thus helping the plants throughout longer droughts. The plants have to be watered less and general water consumption sinks. If necessary, all the water is available for the plants' roots.

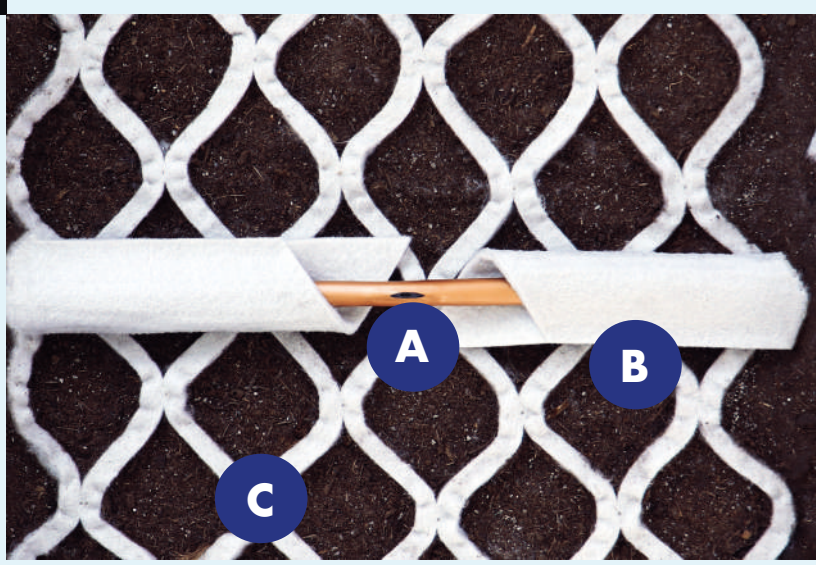


LITE-**NET**

The nonwoven **LITE-DRAIN** nets show excellent aeration and irrigation properties. The nets can be stretched to increase their size up to 4-5 times and easily be covered with soil; in some places they may be even lifted up to the surface. There the **LITE-NETS** absorb air and water in order to spread it most quickly and extensively at root level. The open net structure allows the roots to grow through, and it can be installed at any desired depth in order to be deployed efficiently and close to the roots.

BLUELITE-**NET**
The active subsurface irrigation

A completely new and technically improved solution is the active **BLUE**LITE-**NET** system. It was developed for a water saving subsurface irrigation of e.g. city trees or athletic fields and consists of a drip irrigation tube A, which conducts the water via a nonwoven covering B into a **LITE-NET** C, where it is extensively and evenly distributed at root level. The nonwoven covering protects the tube's openings against root penetration and fine soil particles. It as well distributes the water linearly along the tube and multiplies the water/ soil contact area by a thousand.



The subsurface irrigation prevents evaporation, felting and water logging, reducing soil surface maintenance costs. The irrigation is always and continuously possible, even if the irrigated surface is being used. Due to the open and flexible net shape, no barrier is formed for the plants, which means that the roots can grow freely and even anchor themselves around the net. 100% of the water stored in the net is thus available for the plants (up to 10 l/m², depending on the net type). Compared to spray irrigation, **BLUE**LITE-**NET** saves up to 70% of water. The cost efficient and easy to install **BLUE**LITE-**NET** can be deployed at any depth – optimally adapted to the plants – in waves as well as in multiple layers. Even during the initial growing phase or in case of a plant mix, the roots are excellently irrigated and aerated.

A sustainable vegetation is thus guaranteed.

APPLICATIONS

TREES

Water and air distributing **LITE-NETS** can irrigate and aerate plants extensively, while allowing their roots to grow freely.

LITE-NETS can be used in a variety of ways: as a start-up support for new tree plantations, the net (usually a 100% biologically degradable vegetation net) is wrapped around the root bale. It absorbs air and rain water at the surface and distributes it directly to the roots. Vegetation nets also work very well with watering bags.

LITE-NETS can be used as a cost-efficient alternative to conventional tube systems. They cannot block or buckle and distribute the water efficiently and regularly to where it is most needed.

Additionally, the **LITE-NET** can be deployed in the tree pit and pulled up to the surface along the pit walls in order do absorb water. For each wall covered by the **LITE-NET**, the interconnected void space is equivalent to a DN100-tube.

As the nonwoven nets are slightly elastic, the surrounding soil cannot compact. Cars passing by pump air into the ground and the vegetation net improves the static stability of the soil once the roots have grown through it. Additionally, **LITE-NETS** can carry water and air below impermeable surfaces (like pavements) in order to supply roots with water and guide their growth.

For moving large trees, **LITE-NETS** are also the 1st choice.

ADVANTAGES

- Extensive distribution at root level
- Cost-efficient
- Do it yourself: quick and easy installation
- No buckling or blocking

As an additional water reservoir, **LITE-STRIPS** are mixed into the soil surrounding the roots. The use of **LITE-STRIPS bio** made out of wood fibre (1 season) or PLA (5 seasons) greatly reduces the risk of tree bases breaking or lifting. Over the years, the tree roots can occupy the space freed up by the degradable **LITE-STRIPS bio**.

Also ideal for irrigating trees is the **BLUELITE-NET** system. The installation is easy: for already planted trees, the covered irrigation tube is deployed as a ring around the tree in 5-10 cm depth. For new trees, the ring is additionally put in contact with a vegetation net surrounding the root bale. The irrigation pipes are thus protected against UV radiation and vandalism. The great water/soil contact area allows the water to be distributed evenly. This new system greatly reduces the staff cost as well as the water consumption.

Tree roots screen

PRODUCT RECOMMENDATIONS

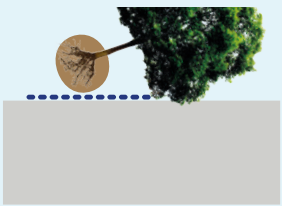
APPLICATION	LITE-STRIPS	VEGETATION NET	LITE-NET		BLUELITE-NET
Initial growth	Bio1 M/6 Bio5 M/5	Bio1 M/6 Bio5 M/5	Bio1 350 C14/6 Bio5 350 C14/5	Bio 5 350 C20/5	
Long-term	M/6			350 C20/10 520 C20/6	
Moving large trees	Bio5 M/5 M/6		Bio5 350 C14/5	Bio5 350 C20/5	
Active irrigation		Bio5 M/5 L/6	Bio5 350 C14/5	Bio5 350 C20/5 350 C20/10	Nonwoven covering

Vegetation net

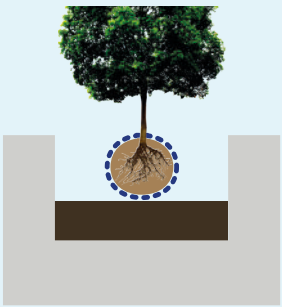
Tree roots net

PLANTING NEW TREES

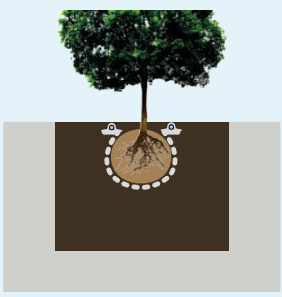
BLUELITE-**NET** FOR CITY TREES



place root bale on vegetation net
gather and secure around trunk

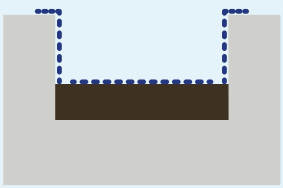


dig hole for root bale
fill soil with special mix
plant tree

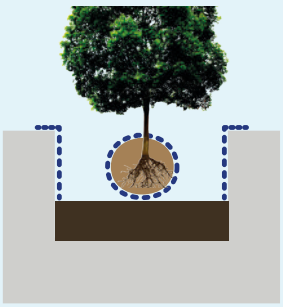


fill hole with special mix
install **BLUE**LITE-**NET** irrigation system
cover with e.g. mulch, wood chips, gravel

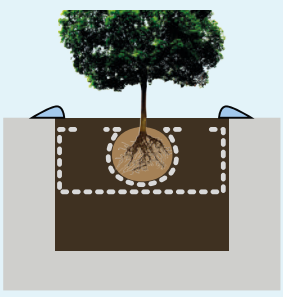
VEGETATION NET + TREE ROOTS SCREEN



dig hole for root bale, fill hole with special mix, position vegetation net + tree roots screen



remove original woven fabric from root bale, position tree in hole
pull up vegetation net around tree

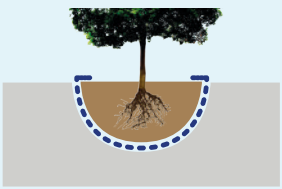


fill hole with special mix
open vegetation net on top
fold tree roots screen on top
optionally cover with e.g. wood slices, etc.

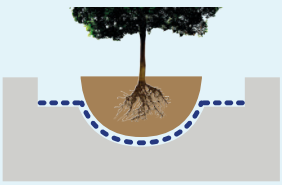
MOVING LARGE TREES

TREE ROOTS NET

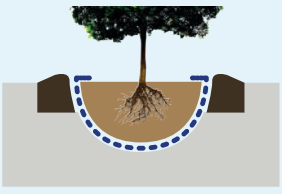
dig hole for root bale
line hole with tree roots net



position tree in hole
pull net towards tree



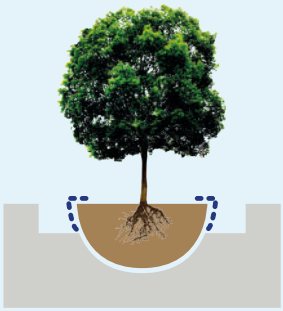
dig trench
open net
trim protruding roots



fold net at the top
fill trench with special mix
optionally install irrigation ring

TREE ROOTS SCREEN

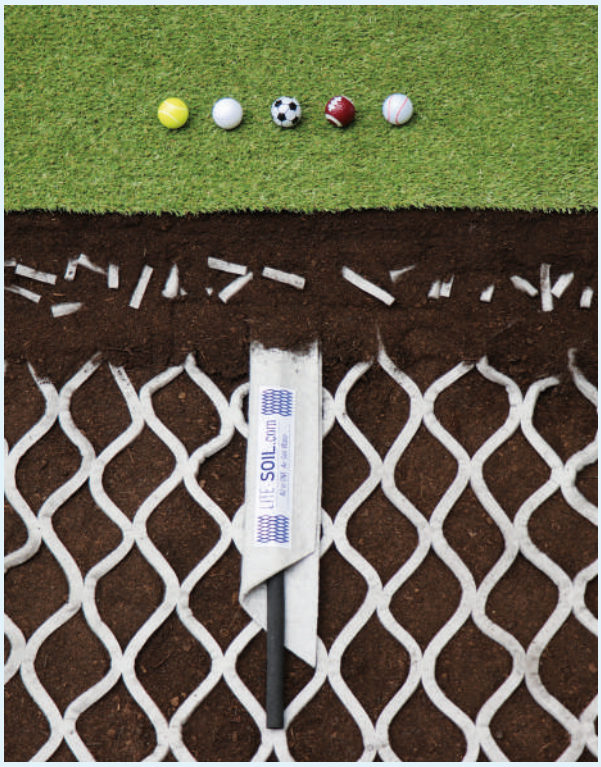
dig hole for root bale
position tree in hole



dig trench
trim protruding roots
place tree roots screen around top of the root bale

fill trench with special mix
optionally install irrigation ring

LAWNS, ATHLETIC FIELDS & LAWN TURF



In order to achieve an optimal and sustainable vegetation, LITE-**STRIPS** – mainly as water accumulators – as well as LITE-**NETS** – mainly as a water distributors – can be used together.

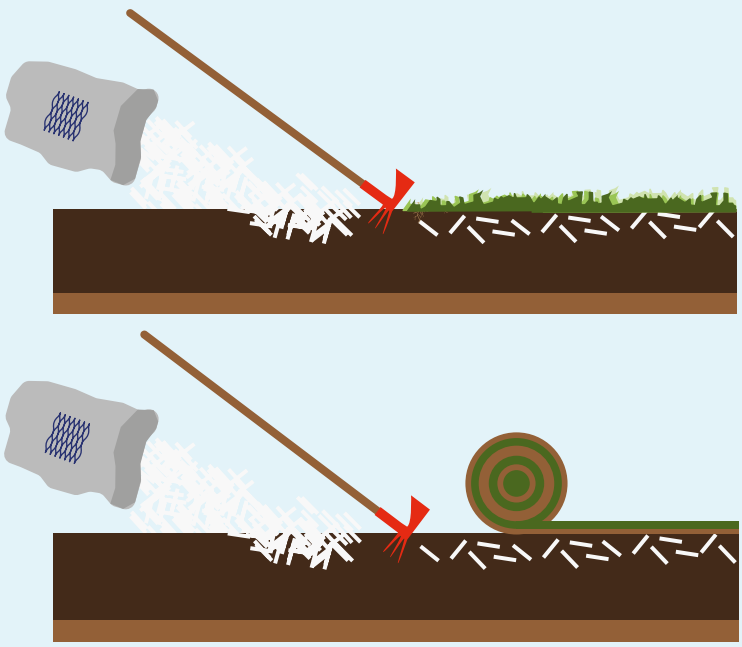
Both variants can be incorporated 3-dimensionally into the top 30 cm of the soil.

BLUELITE-**NET** can be installed at any desired depth – optimally adapted to the respective plants – and placed in many layers and shapes.

Plants and plant mixes are thus steadily supplied with water and air even during their initial growth phase.

Ideally LITE-**STRIPS**, LITE-**NET** as well as **BLUE**LITE-**NET** can also be placed under lawn turf!

The lawn can continuously be used, even during the irrigation!



LAWNS

Mix the LITE-**STRIPS** well into the soil and apply an approx. 20-30 cm thick layer. Or mix the LITE-**STRIPS** into the upper approx. 20-30 cm of the soil with e.g. a rake. Sow the lawn as instructed. Water, done!

LAWN TURF

Scatter the LITE-**STRIPS** on the soil before laying the lawn turf and mix them well into the upper approx. 5 cm of the soil with e.g. a rake. Lay the lawn turf as instructed. Water, done!

PRODUCT RECOMMENDATIONS LAWNS & ATHLETIC FIELDS

APPLICATION	LITE-**STRIPS**	LITE-**NET**		**BLUE**LITE-**NET**
Long-term	M/6	Bio5 520 C14/5	520 C20/6 520 C20/10	
Active irrigation			520 C20/6 520 C20/10	Nonwoven covering

PRODUCT RECOMMENDATIONS LAWN TURF

APPLICATION	LITE-**STRIPS**	LITE-**NET**		**BLUE**LITE-**NET**
Initial growth	Bio1 M/6 Bio5 M/5			
Long-term	M/6	Bio5 520 C14/5	520 C20/6 520 C20/10	
Active irrigation			520 C20/6 520 C20/10	Nonwoven covering

SLOPES

LITE-**NETS** are ideal for slopes, as they combine the best of both worlds: on one hand, they allow for an optimal irrigation and aeration of the slope, greatly increasing plant growth. On the other hand, they actively prevent erosion, as the roots can grow though the net, increasing the slope's static stability.

For slope greening, LITE-**NET** is stretched to multiple times its size and placed on the surface. The extremely flexible net adapts perfectly to the soil, increases vegetation and reduces possible erosion. LITE-**NET** is ideal for hydroseeding.

According to research carried out by the University of Natural Resources and Life Sciences Vienna (BOKU):

• LITE-**NET** retains approx. two times more water than a common coir mat

• the nonwoven net retains even 6 times more water than the coir mat after 24 hours

• the innovative net irrigates new plants much better on a durable basis, thus enhancing their capacity to grow in and attach to the slope

• the vegetation effect with LITE-**NET** is more than 50% higher than with the coir mat

The patented nonwoven net is significantly more flexible than the coir mat and hence perfectly adapts to the surface of the slope, thereby reducing erosion substantially.

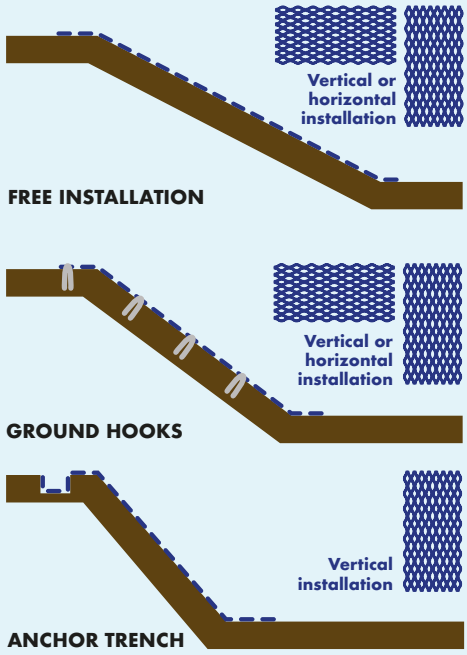
The installation is very simple. For steeper slopes, the nets can be fixed with conventional ground hooks.

BLUELITE-**NET is also ideally suited for watering slopes, especially when they are highly exposed to the sun:**

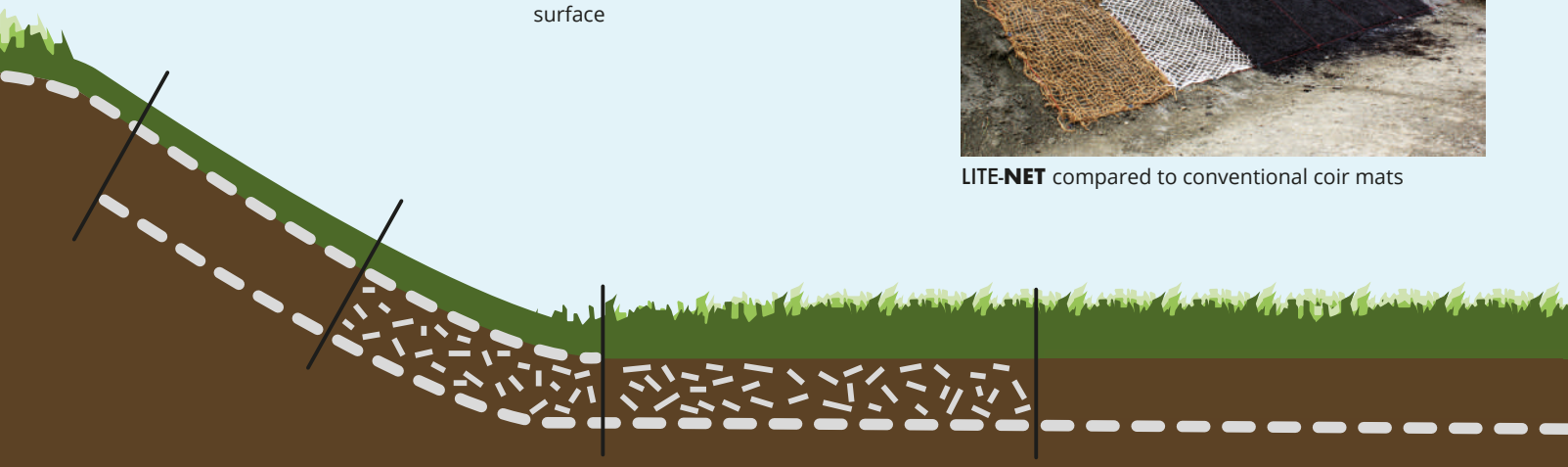
• due to the subsurface deployment, **BLUE**LITE-**NET** is well protected against acts of vandalism

• the open net structure does not produce sliding areas, thus increasing the slope's stability

• the slope is optimally supplied with water from underground, which means that water does not evaporate on the surface



LITE-**NET** compared to conventional coir mats



PRODUCT RECOMMENDATIONS

APPLICATION	LITE-**STRIPS**	LITE-**NET**		**BLUE**LITE-**NET**
Initial growth	Bio1 M/6 Bio5 M/5	Bio1 520 C14/6 Bio5 520 C14/5		
Long-term	M/6 L/10	520 C14/6	520 C20/6 520 C20/10	
Active irrigation		520 C14/6	520 C20/6 520 C20/10	Nonwoven covering

GREEN ROOFS

Applied to green roofs, one special advantage of the **LITE-DRAIN** product range is particularly important: their low weight.

As our geotextiles consist of 90% interconnected voids, they can store up to 8 times more water per kg than conventional products (e.g. LECA).

Simply mixed into the soil, **LITE-STRIPS** function as water accumulators and soil looseners.

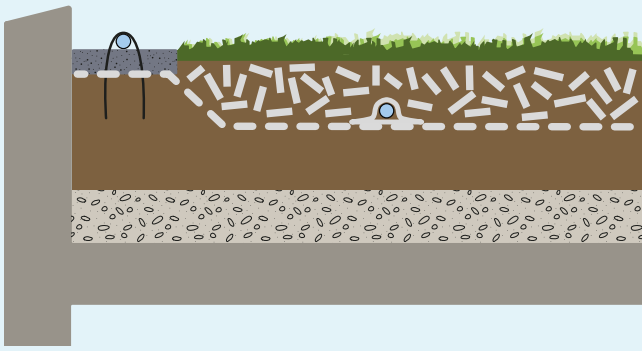
The additional installation of a **LITE-NET** creates an easy to install and cost-efficient subsurface watering and aeration system. Due to the net's open and flexible shape, it can be optimally adapted to the plants at any desired depth. No barriers that could hinder the roots' growth are formed, in fact, the plants' stability is increased as they can anchor themselves around the net. 100% of the water is thus available to the plants (up to 10 l/m², depending on the net type).

This system is particularly indicated for thicker green roofs, as the **LITE-NET** can be installed at any desired depth, especially adapted to every plant.

BLUELITE-**NET** is also ideal for green roofs. The irrigation is always and continuously possible, even when the green roof is being used.

ADVANTAGES

- Extensive distribution without evaporation
- Simple installation at any desired depth
- Cost-efficient and durable
- Water reservoir penetrable for roots
- Up to 70% water savings
- Frost-resistant
- Ideal also for steep green roofs



PRODUCT RECOMMENDATIONS

APPLICATION	LITE-**STRIPS**	LITE-**NET**	**BLUE**LITE-**NET**
Long-term	M/6	520 C20/6 520 C20/10	
Active irrigation		520 C20/6 520 C20/10	Nonwoven covering

RAISED PLANTING BEDS & PLANT BOXES

LITE-STRIPS are also ideal for raised planting beds as well as plant boxes, as they can store large amounts of water. Test carried out at the University of Natural Resources and Life Sciences Vienna (BOKU) confirm that **LITE-STRIPS** can accumulate 8 times more water per kg than clay aggregates (e.g. LECA).

The installation is simple and guarantees a sustainable and lush vegetation:

RAISED PLANTING BEDS & PLANT BOXES

Mix the **LITE-STRIPS** well into the soil. Fill the plant recipient with the mixture, introduce the plant and cover the mixture with approx. 3-5 cm of soil, mulch or similar. Water, done!

PRODUCT RECOMMENDATIONS

APPLICATION	LITE-**STRIPS**	VEGETATION NET	LITE-**NET**		**BLUE**LITE-**NET**
Long-term	Bio5 M/5 M/6	Bio5 M/5 L/6	Bio5 520 C14/5	350 C20/6	
Active irrigation		Bio5 M/5 L/6		350 C20/6	Nonwoven covering

Equally high stacks of LITE-STRIPS made out of polypropylene, PLA and wood fibre as well as rock wool cubes are shown dry on the left and moist and compressed on the right.

As the **LITE-STRIPS** compress much less, the water accumulating capacity of PP is 8 times higher than the rock wool cubes, while PLA is 6 times and wood fibre is 3,5 times higher.

The water accumulating capacity of a 10 l bag of **LITE-STRIPS** is thus higher than a 60 l bag of rock wool cubes (both deployed at a depth of 30 cm). Additionally, rock wool disintegrates once mixed with the soil, greatly reducing its effectiveness.

LITE-STRIPS are thus the only choice for thicker soil layers or areas that are walkable.

LITE-**STRIPS PP** | LITE-**STRIPS PLA** | LITE-**STRIPS WF** | Rock wool cubes

LITE-STRIPS COMPARED TO ROCK WOOL

VITICULTURE & AGRICULTURE

For agriculture and viticulture, the ideal time for using **LITE-DRAINS** products is during the plantation.

LITE-NET vegetation nets are wrapped around the root bale in order to accumulate and distribute water and air. Additionally, **LITE-STRIPS** are deployed primarily as water reservoirs and **LITE-NETS** as extensive water and air distributors.

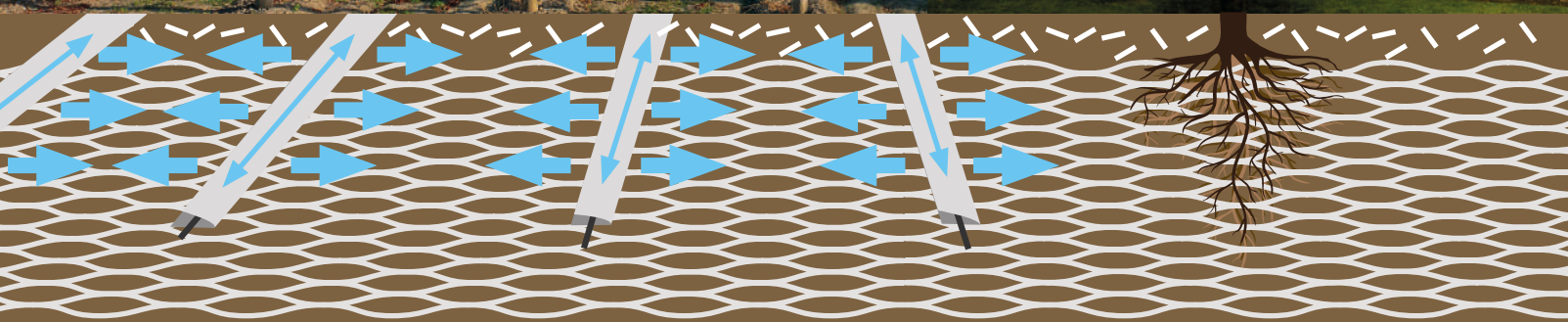
Our **BLUE**LITE-**NET** system is also ideal for an active subsurface irrigation!

LITE-DRAIN products can even be deployed after the plantation at a more shallow depth (e.g. 10-20 cm). **LITE-NETS** are very easy to cut and can be easily installed around existing plants.

As the water-saving subsurface irrigation system **BLUE**LITE-**NET** prevents felting and compacting, the soil surface does not have to be treated as frequently. If the soil has to be aerated and loosened mechanically, the irrigation tubes have to be installed below machining depth.

PRODUCT RECOMMENDATIONS

APPLICATION	LITE-STRIPS	LITE-NET	BLUELITE-NET
Long-term	M/6 L/10	350 C20/6 350 C20/10	
Active irrigation		350 C20/6 350 C20/10	Nonwoven covering



PRODUCT RECOMMENDATIONS

++ very well suited + well suited

APPLICATION / PRODUCT	LITE-STRIPS				VEGETATION NET					LITE-NET										BLUE LITE-NET
	Bio1 M/6	Bio5 M/5	M/6	L/10	Bio1 M/6	Bio 5 M/5	Bio1 L/6	Bio5 L/5	L/6	Bio1 350 C14/6	Bio5 350 C14/5	Bio1 520 C14/6	Bio5 520 C14/6	520 C14/6	Bio5 350 C20/5	350 C20/10	Bio5 520 C20/5	520 C20/6	520 C20/10	Nonwoven covering
TREES																				
Initial growth	++	++	++	++	++	++	++	++	+	++	++	++	++	+	++	+	++	+	+	
Long-term		+	++	++		+		+	+		+		+	+	+	++	+	++	++	
Moving large trees	++	++	++	++	++	++	++	++	++	++	++	++	++		++	++	++	++	++	
Active irrigation						+		+	++		+		+	+	+	++	+	++	++	++
SLOPES																				
Initial growth	++	++	+	+						++	++	++	++	+	+		+			
Long-term		+	++	++							+		+	++	+	++	+	++	++	
Active irrigation											+		+	++	+	++	+	++	++	++
LAWN TURF																				
Initial growth	++	++								+	+	+	+		+		+			
Long-term		+	++	++							+		+	++	+	++	+	++	++	
Active irrigation											+		+	++	+	++	+	++	++	++
AGRICULTURE & VITICULTURE																				
Long-term		+	++	++							+		+	++	+	++	+	++	++	
Active irrigation											+		+	++	+	++	+	++	++	++
ATHLETIC FIELDS & LAWNS																				
Long-term		+	++	++							+		+	++	+	++	+	++	++	
Active irrigation											+		+	++	+	++	+	++	++	++
GREEN ROOFS																				
Long-term		+	++	++							+		+	++	+	++	+	++	++	
Active irrigation											+		+	++	+	++		++	++	++
RAISED PLANTING BEDS																				
Long-term	++	++	+	+	+	++	+	++	+	+	++	+	++	+	++	+	++	+	+	
Active irrigation						++		++	++		++		++	++	++	++	++	++	++	++
FILTER BASINS & SEEPAGE BASINS																				
Long-term			++	++										++		++		++	++	

LITE-STRIPS

LITE-STRIPS	material	L x W x T (mm)
Bio1 M/6	WF	70 x 12 x 6
Bio5 M/5	PLA	70 x 12 x 6
M/6	PP	70 x 12 x 6
L/10	PP	120 x 12 x 8

LITE-**STRIPS** serve as a water accumulator at root depth for soil aeration and vegetation aid. Depending on the application, a volume of approx. 2-20% is mixed into the soil. The basis for the very light and extremely water accumulating strips are time-proven geotextiles optimised for all kind of soils.

Up to 90% of the strips' volume consist of interconnected voids which can be filled with water. All the accumulated water can be at disposal of the roots. There are 3 material variants: 100% biodegradable wood fibre (WF) for 1 season, PLA for 5 seasons (PLA) and long lasting, reusable polypropylene (PP).

Recommended quantity

Trees & Bushes.....10-20 l per pit

Viticulture & Agriculture.....2 l per m²

Lawns.....2 l per m²

Green roofs.....2-3 l per m²

Slopes.....1-2 l per m²

Lawn turf.....1 l per m²

Raised planting beds & plant boxes.....10% of the volume

Delivery: Bags with 10/25/50/100 l, in a 0,7m³ cardboard box on pallet.
Edition 4/2018, subject to alteration. Tolerance +/- 10%

LITE-**NET**

VEGETATION NET

LITE-**NET**	material	mesh size Ø (mm)	thickness (mm)	net size (m)	net area (m^2)	weight (kg)
Bio1 M/6	WF	90	6	1,1 x 0,7	0,8	0,5
Bio5 M/5	PLA	90	6	1,1 x 0,7	0,8	0,4
Bio1 L/6	WF	100	6	1,5 x 0,8	1,2	0,7
Bio5 L/5	PLA	100	6	1,5 x 0,8	1,2	0,6
L/6	PP	100	6	1,5 x 0,8	1,2	0,7

ROLLS

LITE-**NET**	material	mesh size Ø (mm)	thickness (mm)	net size (m)	net area (m^2)	roll size (m)	roll weight (kg)
Bio1 350 C14/6	WF	90	6	3,5 x 14	49	0,8 x 0,35	10
Bio5 350 C14/5	PLA	90	6	3,5 x 14	49	0,8 x 0,35	9
Bio1 520 C14/6	WF	90	6	5,2 x 14	73	1,2 x 0,35	15
Bio5 520 C14/5	PLA	90	6	5,2 x 14	73	1,2 x 0,35	13
520 C14/6	PP	90	6	5,2 x 14	73	1,2 x 0,35	15
Bio5 350 C20/5	PLA	130	6	3,5 x 16	56	0,8 x 0,35	13
350 C20/10	PP	130	8	3,5 x 16	56	0,8 x 0,45	17,5
Bio5 520 C20/5	PLA	130	6	5,2 x 16	83	1,2 x 0,35	13
520 C20/6	PP	130	6	5,2 x 16	83	1,2 x 0,35	15
520 C20/10	PP	130	8	5,2 x 16	83	1,2 x 0,45	26

LITE-**NETS** integrated into the soil function as interconnected water veins. They distribute water and air on a large area at root depth and serve as water accumulators. All the water is at disposal of the roots. Due to the open net structure, roots can grow through and fully develop. A very flexible, 3-dimensional installation is entirely possible.

LITE-**NETS** consist of time-proven geotextiles optimised for all kind of soils. Up to 90% of the nets' volume consist of interconnected voids which can be filled with water. There are 3 material variants: 100% biodegradable wood fiber (WF, brown) for 1 season, PLA for 5 seasons (PLA, white) and the long lasting and reusable polypropylene (PP, grey). In addition to the standard C20 mesh size with an approx. 13 cm wide diameter, finer mesh sizes with approx. 9 cm wide diameters are ideal for applications such as slope greenings or as vegetation nets. LITE-**NET** rolls are delivered with two different end widths, 3,5 m and 5,2 m, and have a standard length of approx. 20 m (larger sizes upon request).

Edition 4/2018, subject to alteration. Tolerance +/- 10%

BLUELITE-**NET**

The active underground irrigation system **BLUE**LITE-**NET** was developed for a water saving and cost efficient subsurface irrigation. It consist of an irrigation pipe, which conducts the water over a nonwoven covering into a nonwoven distribution net, through which the water is evenly distributed over a large area at root depth. 90% of the voluminous nonwoven net and covering consist of interconnected voids, which allow for an excellent water accumulation and distribution.

Product	material	thickness (mm)	lenght x width (m x mm)
NONWOVEN COVERING	PP	6	33 x 7

LITE-**NET**	material	mesh size Ø (mm)	thickness (mm)	net size (m)	net area (m^2)	roll size (m)	roll weight (kg)
350 C20/10	PP	130	8	3,5 x 16	56	0,8 x 0,45	17,5
520 C20/10	PP	130	8	5,2 x 16	83	1,2 x 0,45	26

The voluminous nonwoven covering made out of polypropylene protects the tube's openings against root penetration and fine soil particles. It as well distributes the water linearly along the tube and multiplies the water/soil contact area by a thousand. Due to the open and flexible net shape, no barrier is formed for the plants, which means that the roots can grow freely and even anchor themselves around the net. Even during the initial growing phase or in case of a plant mix, the roots are excellently irrigated and aerated.

Edition 4/2018, subject to alteration. Tolerance +/- 10%

Distributed by:

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Silver medal demopark 2017

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